CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

ENERGY EFFICIENCY COMMITTEE

WORKSHOP

INFORMAL PROCEEDINGS AND PREPARATION OF THE

2003 INTEGRATED ENERGY POLICY REPORT

Docket No. 02-IEP-01

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

THURSDAY, JUNE 12, 2003
9:41 a.m.

Reported by
Alan Meade
Contract No. 150-01-005

A P P E A R A N C E S

COMMITTEE MEMBERS PRESENT

William J. Keese, Commissioner, Chairman

James D. Boyd, Commissioner, Chairman

STAFF PRESENT

Lawrence M. Baird, Ph.D., Energy Facilities Siting and Environmental Protection Division

Bob Therkelsen, Executive Director, CEC

Karen Griffin, Integrated Energy Policy Report Facilities Siting Division

Valerie T. Hall, Energy Efficiency & Demand Analysis Division

Jim McCluskey, Assessment Siting Division

ALSO PRESENT

Jane Hughes Turnbull, Peninsula Energy Partners

Christopher Weare, Public Policy Institute of California

William Hauck, California Business Roundtable

Ralph Cavanagh, Natural Resources Defense Council

Stan Gold, Petaluma, California

Carol Ann Gable, Big Mamas with People Power

Lyn H. Hicks, Capistrano Bay League of Women Voters

Kenneth R. Broome, Power Wheel Associates

A P P E A R A N C E S, continued

ALSO PRESENT, continued

Wendy Phillips, California Regional Water Quality Control Board

Jane Bergen, League of Women Voters of the Bay Area

Rico Cuneo, Butte College Small Business Development Center

Dave Hawkins, California ISO

Doris Maez, San Mateo County Transportation Authority

I N D E X

P R O C E E D I N G S

CHAIRMAN BOYD: We're on the record? Okay. good morning, and welcome to you hardy folks to what is our seventh workshop of a series we've been holding just this month alone. Is the microphone coming through? Okay.

I've been lecturing people for seven days about getting close to the mike. Like Ralph, I tend to be a little loud anyway, but the mike's are really low today. But anyway, let me try again.

Good morning. Welcome, as I said, to this seventh workshop of a series of workshops that we're holding. We've had more than just this month, but this is the seventh this month anyway. All aimed towards development of the California Energy Commission's Integrated Energy Policy report. I'm Jim Boyd, the Commissioner of the Commission, and Chair of the committee of the Commission that is charged with the responsibility for this report. I'm joined by the other Committee member for this activity -- and Chairman -- Bill Keese of the Commission.

The Committee, as I say, was established by the Commission to preside over workshops of the

committee to oversee the preparation of the report, and to undertake all the necessary reviews that are relative and relevant to such a giant undertaking as this is.

Today's workshop and agenda depart from previous workshops, for those of you who are veteran attendees at these workshops, because today we have the League of Women Voters participating with the general public this morning, and this afternoon in the break-out sessions that are planned.

And we're very, very pleased to have an opportunity to work with the League of Women Voters to gain their and their members' insights on the Integrated Energy Policy Report policies, both today and in future months.

When we first started this process, quite some time ago, and began to scope out the report, the League of Women Voters volunteered to co-host a workshop to ensure that the lay public had an opportunity to participate and to better understand the current energy vision and it's implications for California's energy future.

And today's workshop was designed with the assistance of the League and with that

objective in mind. And I would really like to thank the members for taking this initiative. Speaking for all the Commissioners and the staff, we really look forward to learning from today's meeting, and having the League participate in this process.

League members have reviewed numerous Commission papers in preparation for the break-out sessions that will occur this afternoon regarding demand-side management, transmission and distribution improvements, and the risks and costs to California ratepayers.

Following today's workshop the League plans to share the educational insight gained both today and from their review of paperwork with other League members, the general public, and other public interest groups.

The Integrated Energy Policy Report is designed to identify emerging trends related to energy supply, demand, conservation and public health and safety, and to provide a basis for state policy actions in the future, we hope.

We are conducting a number of public workshops on different energy-related subjects that will be considered for the preparation of the

Integrated Energy Policy Report.

We've already had sessions on world oil issues, electricity and natural gas, efficiency opportunities, hydropower systems, environmental concerns, air emissions, public health -- all associated with energy use in California as well as just electricity and natural gas supply adequacy, which consumed the last two days.

As I indicated before, the purpose of today's workshop is to have more of a public dialogue on the features of possible California energy futures, and the choices made regarding infrastructure which might be affected by or might affect the unfolding California future.

Events of the last three or more years have certainly exposed the extreme vulnerability of this state's electricity and natural gas systems, and we hope to gain insight and make contributions to setting us on a proper course.

The committee believes that among the most pressing issues is whether these vulnerabilities are still a concern, or whether administrative legislative regulatory actions and private-sector actions to date in response to all of these events have addressed the vulnerabilities at least for

now.

And with that I'm going to turn the presentation over to Dr. Larry Baird, who's going to moderate this session and introduce our other speakers. Larry? Oh, Commissioner Keese first? An opportunity to say a few words?

CHAIRMAN KEESE: Oh, I'll just say welcome. Our other workshops have been of a technical nature. We need to establish a foundation for what our recommendations are going to be. This is our first step towards what is our eventual conclusions, and that is policy recommendations.

So, we look forward to your help as we steer into the policy recommendations we suggest the governor should adopt for the state of California. And welcome, again.

CHAIRMAN BOYD: Thank you, Chairman Keese. And Larry, before you get started, I want to particularly thank Jane Turnbull of the League of Women Voters, who's been their consultant on energy matters, and who's played a big role in today's activities. Thank you.

All right, take it, Larry.

MR. BAIRD: Good morning. My name is

Larry Baird, and I would also like to thank --

CHAIRMAN BOYD: You'll have to speak up, Larry. I don't know what's happened to the volume in this system, it's on and off.

MR. BAIRD: I would also like to thank Jane Turnbull and the other members of the League, who came to Sacramento on different occasions -- is the mike on? Wow, it's just like being a deejay. Okay?

I would again like to thank Jane Turnbull and the other members of the League for coming to Sacramento for three scoping sessions that led to today's meeting.

This one, as Commissioner Boyd said, is somewhat different in that we are attempting to stress education of the general public and the informed public, and the League is indeed an informed public.

We gave them reams of background information, both from Energy Commissions reports and other policy pieces, and they've been very aggressive in not only reviewing them but contacting people like Professor Weare and even people at Stanford University and other universities to get divergent views before we

begin this process.

Another unique thing about this morning's session and this afternoon's session is that we have excellent speakers in the morning, and in the afternoon we have break-out sessions in which we ar going to attempt to address three issues -- one, is there a consensus among interested parties regarding the usefulness of the structure and function of the existing hybrid system.

The League didn't pick small questions to deal with, they helped us define these. And we're going to attempt to address the question of what kind of --

CHAIRMAN BOYD: Larry, you're going to have to get the microphone right in front of you, and you have to speak directly at it.

MR. BAIRD: Okay. And then we're going to -- I'll repeat the first one. Is there a consensus among interested parties regarding the usefulness of the structures and functions of the existing hybrid system.

Second issue we're going to look at in workshops is what are the most likely scenarios for the state for the next five and ten year

timeframes.

Thirdly, we want to ask how do policymakers expect these scenarios to affect the state economy, environment, public health, and various ratepayer groups.

One housekeeping function -- after lunch today, a number of you will go to the second and third floor conference rooms. One of the meetings will be held in Hearing Room B right across the way. If you'll look at your agenda for the day it tells you which one of the three workshops you ar invited to attend.

At the end of this session this morning -- we've changed slightly -- there will be a Q&A period, and if, after the end of the session there is time for other speakers, if the committee wants to entertain that, we will do that at that time. At this point I would like to introduce Bob Therkelsen.

MR. THERKELSEN: Thank you, Larry, and good morning folks. I'm the Executive Director here at the Energy Commission, and on behalf of all of the staff I want to welcome you to this workshop and this event. We really appreciate your input.

In particular, I want to also extend my thanks to the League of Women Voters for co-hosting this event. It's very important to us not only to have agency input and industry input, but it's very critical to have public input in terms of what we're doing so that the policy recommendations that we present to the governor and the legislature represent a public reaction as well as having that technical foundation.

What I'd like to do this morning is give you a very brief overview of the Integrated Energy Policy Report, and sort of set a foundation for some of the discussions that we'll be having.

And to start that -- well, to start that I'll give you another apology. Our technology with the projector is not the best that it could be. Providing that the budget is approved in a timely fashion and we still have some money left, we will try to replace our microphones and our projector.

Anyway, I think if one thing characterizes the state of energy over the last several decades, it's been one of change. And as you'll notice there, there's a number of definitions of change that I've included.

To substitute one thing for another, we seem to have been doing that a lot lately. To alter, we do that very frequently. And to shift. I think nothing has characterized change more than what has happened in the electricity area, and all of you have been a witness to that.

You know, it goes back to 1887 when we had the first power plant start in California and several of you have probably been out to the Folsom Lake powerhouse, where the transmission system started for the state. And things remained fairly stable for awhile.

One of the key events for the Energy Commission was 1975, when the demand forecasting responsibility for the state was established, and along with that a whole resource planning era was ushered in. And then things rapidly changed after that.

Qualifying facilities, needs tests, environmental values came online. We went to bidding process. In 1996 we started the grand experiment with restructuring. That led to the conclusion in 2001 of blackouts that people got to experience.

And now we're kind of in a question mark

period of where exactly are we, where exactly are we going to go. Those changes have obviously stressed the infrastructure of the system. Not only has the infrastructure been stressed in electricity, but also natural gas and transportation fuels as well.

Several policy issues have been raised over the last several years. Should the state purchase energy? Obviously that's something the state did for awhile, and the legislature decided that's not the business we really want to be in. But issues of ownership, of how much we're going to depend on electricity imports from other states -- we depend on a significant amount right now. What we're going to do with those old power plants that exist up and down the coast and elsewhere in the state.

How are we going to relate to the other western states? We are part of the western grid, we are part of the western of the natural gas system. We're obviously part of the world transportation fuel system. How are we going to relate to the federal government?

What we're going to do in terms of our increasing dependence on natural gas. And

focusing on that as a primary fuel source for electricity. What are we going to do with LNG, is that something we're interested in entertaining -- liquefied natural gas being an option available to California.

What are we going to be doing about our increasing dependence on petroleum that exists? Another fundamental policy issue is where exactly are we going? Are we going to be -- in the electricity area in particular -- are we going to continue with some kind of competitive market, or are we going to be placing greater emphasis on public power?

Are we going back to a utility system? Are we going to have some hybrid that kind of is a mix of those? That's a fundamental policy issue that's being debated right now in the legislature, in between discussions on the budget.

And then, of course, energy does not exist in the world by itself. But it also is part of a bigger fabric of policy issues related to population growth, air quality, all of our environmental resources. Global climate change, equity issues that are coming up more and more frequently. Environmental justice kind of things.

The whole question of infrastructure adequacy, and then tied in of course is the condition of state and local budgets. Those are all some of the policy backgrounds that exist in terms of looking at the issue of energy policy, and where we're going.

For years the Energy Commission was charged with looking at electricity supply and demand, presenting forecasts to the governor and the legislature. As years went by we were also charged with looking at preparing fuels reports, efficiency reports, R&D reports, you name it.

A whole series of independent reports that looked at various technical and policy issues related to energy. And when restructuring came around in 1996 I think there was a common thought that the state no longer needed to be involved in planning, the state no longer needed to be involved in forecasting where we were going -- the market would be taking care of that.

And I think the legislature realized last year, with the passage of Senate Bill 1389 that no, there is a fundamental responsibility for the state to look at planning, to look at where we're going, and to lay some foundation, if you

will, for the policies that exist in the state.

We can't just react depending upon what the market is saying. And as a result of that, the legislature passed, and the governor signed, as mentioned, SB 1389, which established the Integrated Energy Policy Report.

What that did was take all of these independent assessments that the Energy Commission used to prepare, and put them in one package -- the Integrated Energy Policy report.

That represented a major challenge for us, because instead of looking in isolation at these different energy issues, it required us to look at them across the board. How they affect each other, how they relate to each other, and how they relate to the other policy issues.

As it mentions there on the slide, we have to consolidate not only all the energy analyses, we've got to consider all fuels, we need to look at the trends and outlooks that the state is likely to experience in the future, and establish a basis for the policy recommendations that we pass on to the governor, and the governor subsequently passes on, accepts or rejects, and then passes on to the legislature.

One other thing that was very important in terms of that legislation was the last line there, not only do we have to consult with other agencies, which is something that is often thrown into legislation, but was a requirement that other agencies use the information that is developed in the Integrated Energy Policy Report.

So your input is important not only influencing us, but its important in influencing other agencies as well, ultimately as the governor and the legislature.

The chart that I had up before is intended to illustrate what the Integrated Energy Policy Report does and how it works. And, again, I apologize for the one up here on the front screen. The one over on the TV may be easier to see, but again you can't read what's on it.

Let me walk you through it. Basically, the overall theme -- and that's located in the center circle there -- that the committee has chosen to focus on, is infrastructure. And what the infrastructure needs are for the state.

Influencing the energy policy report are three subsidiary reports, and those are listed over on the left hand side. The first one is the

Electricity and Natural Gas Assessment, the second one is the Transportation Fuels Assessment, and the third one is a Public Interest Energy Strategies Assessment.

The last box down there focuses on energy efficiency, renewables, research and development, other activities that are strategies for implementing issues and concerns that are identified in the other reports.

Those three technical analyses form the analytical foundation for the whole overall Integrated Energy Policy Report. That report then will be adopted by first the committee, and then they will pass that on to the full Commission for their consideration and adoption, and once that is approved by the Commission it will be passed on to the governor for his consideration, and 90 days later he will modify it as he sees fit, and then transmit that to the legislature.

The basic outputs, then, of this report are policy recommendations. And they are intended to guide and direct not only the Energy Commission, but other state agencies as well. In reality, the Energy Commission and other agencies become implementers then of those policies.

All of that clearly affects Californians, and that's why we need to have your input. And I believe in some of the documents that you have you may have this diagram -- if it isn't then we'll make copies of that for you.

In terns of the schedule, as Commissioner Boyd mentioned, we've been very active with public workshops seeking input into the analyses that we have prepared. We'll be presenting staff reports, and committee draft reports, on into the fall, of these various documents.

So the three subsidiary reports, if you will, of electricity and natural gas, transportation and fuel, and the public interest energy strategies, all will have a separate report.

And then the conclusions of those will be pulled together into the final Integrated Energy Policy Report that will be adopted by the Commission -- considered for adoption in late October -- and then transmitted to the governor by the first of November.

And as I mentioned before, the governor intends to then take a look at that and then his

responsibility is, sometime in January, to transmit that to the legislature. We will be having other public outreach events, there will be opportunities when we come out with individual reports for people to provide us comments.

We hope to have hearings in other locations of the state before the final adoption, again so we can get input. So this is not your only opportunity to provide your observations, but we clearly encourage you to give us your thoughts and give us your ideas and reactions to what we are considering.

That's a quick overview of the report and where we're going. And I guess I would ask if there's any questions on that quick overview before I turn it back over to Larry? Yes, in the front row there.

I think they want you to use the microphone so we can get all of your words on tape there.

MR. GOLD: Conspicuous by its absence are alternative energy headings on any of the material that's been shown to date. I'd like to hear some comment on that.

MR. CAVANAGH: You will!

MR. THERKELSEN: Very good comment. Actually, the Public Interest Energy Strategies Report, the third one down here. One of its major focuses is on renewables and other alternative technologies, so we will be capturing lots of material on that subject as well as Ralph, obviously, is going to be addressing that today. Other questions? Yes, ma'am?

MS. GABLE: The abbreviations for the implementers -- could you please just go over what those stand for?

MR. THERKELSEN: Sure. The implementers that are listed are the CEC, which is the Energy Commission; the CPA, which is the California Power Authority -- their offices are located across the street, and they're responsible for financing energy projects and energy development.

There's the Air Resources Board. The EOB, which is the Electricity Oversight Board -- they have oversight responsibilities over the state's transmission system operator. There's the CPUC, which is the California Public Utilities Commission. Obviously they have responsibilities for regulating the utilities, the investor-owned utilities and for determining rates for those

utilities.

There's the Cal ISO, which is the Independent System Operator, which operates the transmission system. There's the Department of Water Resources, which manages the state's water project, and also has been the manager of the state's power purchase contracts in the past, until those were turned over to the utilities.

And then there's CalTrans. CalTrans obviously not only has influence over maintaining our highways, but also alternatives in terms of transportation. So those are some of the implementers.

I think the reality is there's many more on the list than that. And General Services, and other state agencies, as well as hopefully implementers at the local level. Other questions? Yes, sir.

MR. BROOME: Presumably you're looking ahead for 20 to 50 years possibly, to try and not have to change our energy policy too frequently. How are you going to allow for the changes in both economic and technological development over the period of the future that you're trying to forecast?

MR. THERKELSEN: Very good question. The question there is on our forecasting. In terms of our forecasting, most of our analyses look at least ten years in advance, and some of them -- transportation fuels and etc. -- look longer than that.

One of the things we're required by the legislation to do is prepare an update every year, so in 2004 we will have an update which will adjust any of our forecasts, and accommodate any changes in the economy, whatever regulation may be existing out there.

And then we come out with a major report every other year. So in November of 2005 we will adopt our next Integrated Energy Policy Report. So that is how we include that. In our analyses we are looking at a number of different scenarios.

One of the discussions that occurred yesterday and the day before, when we were talking about electricity and natural gas, was different scenarios. We were looking at different pictures of the economy, different pictures of how renewables may be integrated into the system.

Different issues in terms of energy efficiency, and how that may be reflected in the

system. That's how we're dealing with those issues.

CHAIRMAN BOYD: Bob, the gentleman also asked about, how are we incorporating advancing technology. Why don't you talk about PIER a little bit?

MR. THERKELSEN: Right. In terms of the technology, one of the major programs at the Commission is the Public Interest Energy Research Program. That is focused on electricity research, and we basically -- in this report, and again under the Public Interest Energy Strategies-- we'll be discussing the trends in energy research and technology development to not only identify where things are currently, but where we see things going.

What kind of trends are needed, and what kind of policies or support may be needed to encourage different things to be developed. While our PIER program focuses in on electricity, this report will focus on not only electricity R&D, but natural gas and transportation research and development as well.

So that's how we focus on the technology part. I think there was one more questions there? Yes, ma'am?

MS. PHILLIPS: Good morning. In reviewing the papers, I confess I was having some trouble getting a handle or perspective on the megawatts and the gigawatts. Before we get too far into consumption trends and the need for new facilities I was hoping you could give us some sense of scale, in terms of these units?

MR. THERKELSEN: Sure. In terms of megawatts, we usually say a megawatt provides enough power for roughly a thousand homes. And that gives you a sense of things.

For those of you living in Sacramento, when the Rancho Seco plant was operating, that was a 900 megawatt power plant, and provided power for around 100,000 people.

In terms of a new power plant, most new power plants nowadays are somewhere between 300 and 500 megawatts. That's sort of the plant of choice this day if you were a natural gas project.

Obviously if you're wind or geothermal, the sizes are smaller than that. Our demand growth is roughly two percent per year. And so that means if you were to build new power plants, or you were to add energy efficiency measures to accommodate that growth, you would need to be

adding or subtracting about 1,000 megawatts worth of new power plants, or reducing energy demand by 1,000 megawatts every year to be able to keep up with that growth. Does that --?

CHAIRMAN BOYD: Bob, a typical daily load in California -- a summer peak day is --?

MR. THERKELSEN: Typical daily load in California -- okay, for example, right now, this morning, the load in the service area of the three major utilities is around 32,000 megawatts, and that's on a cool summer day.

A peak demand day will be on the order of, what, can get as high as 50,000 megawatts. Average during the winter is somewhere around 30,000 megawatts perhaps, that's sort of a typical range.

CHAIRMAN BOYD: Generating capability available to California is typically --?

MR. THERKELSEN: California's got about 55,000 megawatts of power available to it, in terms of its instate generation. And then we have additional generation that we can call on from outside.

California represents about 40 percent of the western United States electricity market.

And one of the things that's unique about electricity is California is not, again, an island, but we're connected to the whole western United States.

CHAIRMAN BOYD: How many megawatts of that is typically renewable?

MR. THERKELSEN: Right now, I think our renewables represents around ten or 11 percent of the generating capacity within the state. Obviously, that's a goal. The legislature has asked to increase by 20 percent by the year 2017.

It's something the Energy Commission and the other agencies are trying to push even earlier than that. Is this an exam?

CHAIRMAN BOYD: We don't get this opportunity every day.

MR. THERKELSEN: Yeah, this is pretty good, I'm getting grilled by my bosses over there. Anyway. Yes, ma'am?

MS. PHILLIPS: Did you just say that renewables represent ten percent currently?

MR. THERKELSEN: The question was what do renewables currently represent. And they represent around ten or 11 percent of the capacity in the state.

MS. PHILLIPS: And most of that's hydro?

MR. THERKELSEN: No, that does not -- the question was is most of that hydro. And now this is where I'm going to get a little glitchy here. I don't think that number includes large hydro. That's only small hydro, geothermal, wind, solar, biomass, and other similar kinds of things.

CHAIRMAN KEESE: Hydro is from ten to 20 percent, depending on whether it's a normal year or a wet year. A wet year we can get up to 20 percent, a dry year ten percent of our energy from hydro.

MR. THERKELSEN: We import roughly 25 percent of our electricity during the course of a year. Any other questions? Energy 101. Well, I'm sure the two gentlemen that are about ready to speak, actually a third gentleman's on his way, will have much more in terms of facts and figures for you. And you'll be in good hands there.

So, Larry, I'm going to turn it back over to you. And thank you all once again for coming, and again thank you especially the League of Women Voters for co-hosting this event.

MR. BAIRD: Thank you, Bob. Our first speaker this morning is Christopher Weare. He is

a Research Fellow at the Public Policy Institute of California. He has worked in the residential, telecommunications, financial markets, and electricity sector, focusing on tradeoffs between efficiency and other goals.

He is also researching the effects of information and communication technologies on local governments, and citizens political participation.

Before coming to PPIC, or the Public Policy Institute of California, he was Assistant Professor at the Annenberg School of Communications at the University of Southern California. Go, Trojans. No reaction?

He has also spent a year as a congressional Fellow in the House of Representatives. He holds a BA from Harvard University, a Masters and a Doctoral degree from the University of California at Berkeley.

And one of the reasons we invited Dr. Weare to join us today was, in scoping out a potential speaker on kind of the historical trends or events that got us to where we are today, Karen Griffin, who helped me put this together -- I forgot to thank her the first time -- and I

immediately concluded that probably the most balanced presentation we could get would be from Dr. Weare.

He has written a paper entitled "California Electricity Crisis, Causes and Options", and that is the title of his speech today. Welcome, Doctor.

MR. WEARE: It's always nice to have the audiovisual going smoothly. Thank you very much for having me today. How do we change -- we lost the --. So much for my comment about the smooth operation of the audiovisual, I screwed things up.

Today I'll be talking on a subject, a report that I wrote and was published by the Public Policy Institute of California. If you're interested in either the report or a short version of it, you can get either one of those on our website -- www.ppic.org.

And I did try to do two things in the report. Really diagnose what went wrong with the energy crisis that hit us in 2000 and 2001. And starting to scope out what are the major institutional choices that face the state in trying to rebuild the electricity sector.

This graph really captures fairly well

exactly what befell the state through the restructuring of the electricity sector. And one of the things that we should not forget is that during the first two years of electricity restructuring the markets actually worked relatively well.

There was heavy competition on the spot market for wholesale prices, driving down the price of electricity, where it never went over $50. But then, very unexpectedly, in the summer of 2000, we were hit with very heavy price volatility that completely escalated out of control during the winter of 2001, and really bringing down all of the major institutions.

Bankrupting the PX, forcing the state to become the buyer of last resort. And really bringing the entire electricity sector to the brink of collapse.

Now, since then, and starting at the summer of 2001 -- largely due to some actions by FERC and largely due to the purchasing of long-term contracts by the state of California and unprecedented conservation, the crisis abated.

And since then wholesale prices have stayed relatively low. But the crisis, I would argue, is

far from over. And we really had three stages of this crisis.

The first one, which was during the summer of 2000 and the winter of 2001, was just the effort to keep the lights on. So it was a number of emergency actions, including the state taking over responsibility for purchasing power, signing some very expensive long-term contracts with power producers.

Finally, the Federal Regulatory Commission coming in and setting price caps on wholesale rates. And there was a number of emergency conservation measures.

Since then, a second, and much more protracted stage of the crisis, has been figuring out who needs to pay for the billions of dollars of cost that we incurred during this crisis.

This includes the cost of these long-term contracts, the cost that the state directly paid for purchasing electricity, and the debts that still remain on utility balance sheets for their purchase of high-priced electricity in the midst of the crisis.

This has been going on at refund hearings at the Federal Energy Regulatory

Commission that are close to winding down, but still haven't been completely finished. This has also been fought out in a number of investigations and court cases on market manipulation by wholesale providers.

There's the PG&E bankruptcy hearings that are still going on. There's a current challenge to the agreement between Southern California Edison and the Public Utilities Commission on how they resolved the Southern California Edison's debt problem.

And an ongoing problem that's not going to go away quickly is the problem of direct access. What happens when people want to start buying electricity directly from a third provider? What is their responsibility for these debts that were incurred?

And now we're, mostly with the beginning of this last legislative section, and with a number of actions by the California Electricity Commission and the Public Utilities Commission, we're beginning to rebuild the electricity sector, and figuring out the basic ideas.

How are we going to express consumer demand? How are investment decisions going to be

made for the electricity sector? How are prices going to be set? And the crisis, and the harried response to that crisis, really had such a devastating effect that, really, we're starting almost from scratch on this third stage, and can go in many different directions.

Now, in going forward, it's really critical for California to understand very clearly what were the causes of this crisis? Because trying to fix the wrong thing can just lead to further future problems.

And I think that one of the most important things that we need to remember about this crisis is that it was caused by the confluence of several events. It's very difficult to pin it on any single one.

And some of those things is that there was a real shortage of generating capacity. A drought in the northwest, combined with rapid economic growth in California and in the southwest, and very hot weather in the southwest, did reduce the amount of generating capacity available to California.

This shortage of generating capacity was very unexpected. The California Energy Commission

had come up with a report in January of 2000, saying that the wholesale market prices were actually going to go down. And the California Energy Commission was not the only actor that was caught unprepared for this crisis.

The major utilities, the people who should be knowing most about what's going on within this electricity sector, failed to make basic economic business decisions to be prepared for a shortage in generating capacity.

We also had bottlenecks in related markets, with the possible importation of natural gas, and also with our transmission system, which restricted the flow of electricity into certain areas.

From southern california to north, and in particular bottlenecks into transporting electricity in San Francisco, which led to a number of blackouts.

And finally, after many years of hearings, the Federal Energy Regulatory Commission finally admits, yes, there was the exercise of market power by wholesale generators. And they were able to raise the price above competitive levels during that crisis.

There were also a number of major regulatory missteps. In particular, there were a number of decisions by the California Public Utilities Commission that forced utilities to buy most of their power in the spot market, which made California very vulnerable to spot market prices.

This was a unique situation in any restructured electricity market. And also there were problems with market design. These are very technical issues, but there are ways that the auctions for power were structured that made it particularly easy for power generators to manipulate that market.

And we have heard of those manipulations with Darkstar and other of Enron's interesting trading schemes. But the important thing to remember is that you can't pin this crisis on any single one of these.

Yes, there was a shortage of generating capacity. But there's been shortages of generation capacity in other restructured markets, and they haven't had the systemic failures experienced by California.

Bottlenecks in related markets, transmission of electricity is a nationwide

problem right now. The restructuring of the electricity market has greatly increased the flow of electricity through flows that were unexpected before, and the transmissions system was simply not designed to take up, to handle these flows.

And so that was not unique to the California market. Also, we can't blame it completely on market power. As the graph that I showed you before, the market was in fact very competitive, and most generators were probably not making very much money producing electricity prior to the summer of 2000.

So if you're going to argue that it was only market power, you have to able to also argue why was market power not exercised prior to the summer of 2000.

There were regulatory missteps, yes. But still it's hard to explain that utilities didn't use all of these long-term contracting authority that was provided them from the PUC. So it wasn't only the regulatory constraints that made California excessively exposed to the spot market.

And then faulty market design, you can't completely blame it on that. Every single

restructured market has had mid-course restructurings. It's an extremely complicated affair to design competitive markets in electricity, and no one has gotten it right the first time, they've always made adjustments.

In England, in Pennsylvania and in Texas, and in other markets. So we can't pin it completely on that. So we really have to come up with ways of addressing all of these issues. And getting the system right is getting increasingly important.

And the main reason for that is that our economy will pick up, energy demand continues to grow, and with that we have to be able to build the added generating capacity, or create incentives for conservation, create new transmission lines to handle our energy demands. But what we've done with this muddled, hybrid market that the crisis has left us with is created a very uncertain investment environment, making both the utilities and the merchant generators very hesitant to come in and make investments.

And because of that we really have a risk of repeating history. One of the causes of

the 2000-2001 crisis were the uncertainties of the transition from a fully-regulated to a restructured market. There were delays in investments in new capacity.

And if we do exactly the same thing, where people refuse to make the new investments -- we changed the necessary policies because of this uncertainty. As the economy grows we may have a system where demand outstrips our generating capacity.

So one of the critical components that we really need going forward is the consensus, both between the CEC, the Public Utilities Commission, and the legislature, and the executive branch of California, to create some sort of certainty for the electricity industry.

So, I'm going to talk about two things. And the first thing will just be rebuilding electricity institutions. And I said that the devastation was so complete during the crisis that we're really starting from scratch.

And from policy perspective it's a very interesting time to look at this. Because we are debating the widest range of possible structures for our electricity industry that we have ever

done, since the inception of this market.

And then I'll talk a little bit about some overarching policies, things that regulators and legislature should do no matter which direction we take the electricity industry.

So there's really three directions that we can go in this. And that is increasing the role of the public sector, or we can try to go back to the pre-1996 world of fully-regulated monopolies, or we can try to fix our system of restructured markets and going forward with that.

Now there's no major state-level initiative to increase the role of public power, but there has been a lot of additional interest in public power since the beginning of the crisis.

We created the California Power Authority, which has the authority to sell $5 billion worth of bonds to build -- it's not exactly clear what they will use for. But they can use it for conservation programs, or to build new generation capacity or transmission. And that remains up in the air.

I skipped one point. One of the things to remember about this is that public power has played a very major role in California electricity

sector since its beginning. Fully 25 percent of the electricity sold in California is sold through either municipal electricity providers or cooperatives, and there has been interest among cities to try to expand on that.

San Francisco has had votes on whether to municipalize their electricity sector. Corona down in southern California has also examined it.

Now, here's a very little known fact, I don't think you see this very much. But actually the history of public power in California tells a relatively positive story, that consistently public power providers have sold electricity for about ten or 15 percent less than the three major investor-owned utilities in California.

Now there's some reason why that is so. In that public providers have certain advantages that are not available to investor-owned utilities. They can completely finance themselves with debt, which is less expensive than financing yourself with stock offerings. They don't have to pay taxes, they don't have to pay dividends, and they've also had access to cheap, federally-supplied power from federal power projects like major dams.

So if you eliminate -- people have tried to really compare these, and have still tried to account for all these subsidies, and still find that publicly provided power is relatively competitive in doing national comparisons.

The future for public power, though, is less certain. One of them is that the federal government is not building any major new power projects, so the access to cheap federal power -- there's not going to be any new cheap federal power for them to buy.

There are bills that have been floated in Congress to change the tax status of municipal utilities where they would have to pay the same taxes as IOU's.

And one of the most important problems on the municipal level is that, for a municipality to become it's own public provider it has to buy the transmission and the distribution from the investor-owned utility that currently owns it.

And those efforts to buy out the investor-owned utility assets have been highly politicized, very contentious, and they can end up being very expensive. And at some point they become so expensive that there's no added benefit that a

municipal utility can pass through to its customers.

People who have done very detailed analyses of the relative advantages of public power really found that what they're good at is they're good at operating the networks, which are really monopoly components of the electricity sector.

So the transmission grid and the distribution grid. But they're relatively less successful at efficiently running generation plants. So this kind of -- this should be a major caveat for where the California Power Authority goes, since its been mostly thinking of building generation plant, while that may not be where its competitive advantage lies.

The second major alternative, which has really been introduced by a bill by Senator Dunn, Senate Bill 888, which passes the Senate a week or two ago, is to go back to the world of pre-1996. And one of the things I want to point out is that even though there has been a lot of talk about restructuring, and that seems to be the cutting edge of electricity policy, still the majority of the states have maintained their fully

regulated regimes.

So all those states in yellow, they haven't even considered doing any de-regulatory efforts. And there's been a couple of states, such as California and others like Montana where they've taken a step back and decided to reconsider whether they really want to have restructured markets and rely more on competition.

So it's not all that unusual to still have regulation. And it's important to kind of understand the political economy of regulation.

If you look at these lines -- the states that have considered regulation have been very different than the states that have -- I mean, the states that have considered restructuring, deregulation of the electricity system to some degree -- have been very different from the ones that have just maintained the regulatory rated regimes.

Regulated states have had lower prices, and prices that are very stable. In contrast, the states that got interested in restructuring, they not only had higher prices to begin with, those prices were increasing in the early 1990's, when this de-regulatory movement was really going

strong.

This raises a couple of important issues. People may have been de-regulating for the wrong reasons. Those states may have made very specific wrong decisions or made some mistakes that increased their rates.

For example, in California one of those was the construction of large numbers of nuclear facilities, which greatly increased the rate base, and the average cost of electricity. But de-regulation couldn't fix those past mistakes.

We're still going to have to just pay off those assets, and prices were going to come down with or without competition in those states as we paid off those high-priced mistakes in the past.

So it's going to be very difficult because of this selecting that it was the state that had made the mistakes that ended up de-regulating. It's going to be very hard to differentiate in the future.

Was it really de-regulation that improves matters, or was it just that, after awhile you make a mistake, and after you pay off the mistake your rates naturally go down.

There's some very significant advantages

to the old rate of return regulation regime. And the most important one is that it had a very good history of stable investments in electricity where forecasts for demand and investments were made in relation to those forecasts, and they were able to keep investments ongoing in relation to demand relatively well.

The other thing is that we have the problem of who's going to pay for all these long-term contracts that California currently bought. And under a regulatory regime there's fairly standard rules that allow us to allocate those costs to different customer classes.

A big complaint about regulations is that it's been inefficient over the years, but there's lots of ideas that have been implemented in different regimes that can actually improve the efficiency of regulation.

And I've heard many times -- even from staunch advocates of market competition of electricity will admit when you really press them, will admit that, well, you can actually get most of the benefits from the market can also be gained if you just improve the way that you regulate electricity companies.

But there's some important limitations to the old regulatory market, and historically there have been real inefficiencies. And the example that I like to talk about isn't from the electricity sector, but it's from tele-communications. And that's cellphones. Cellphones are not a new and fancy technology. Cellphones were developed right after World War Two, and some of the basic ideas for cellphones actually came together before World War Two. But you had a regulated monopoly controlling the telephone sector.

AT&T didn't have any interest in developing a new technology that was just going to cannibalize its franchise in local telephone markets. And the FCC was very slow to allocate the spectrum needed for cellphones. And it was only after the breakup of AT&T and there was some movement towards competition that we really allowed the cellphone market to flourish.

There's also just the problem of putting the genie back in the bottle. We don't exist in a pre-1996 world. Now major portions of our generating capacity are owned by these merchant generators, and by what are called qualified

facilities.

So that actually the utilities own less than 50 percent of the generating capacity in California. And the major question is exactly how do you put the genie back in the bottom if we don't have a single, integrated utility to regulate.

And within that mixed world, where you have competitive providers next to a utility, there's always significant regulatory problems that accrue because of the juxtaposition of a competitive and a regulated environment.

And just for a little history, it was exactly those types of regulatory problems that was one of the major driving forces towards restructuring in California because the Public Utilities Commission was having continued difficulty trying to manage the possibility of large customers leaving the grid versus keeping them on the regulated grid.

And one of the options that came out of all that was to completely restructure the market.

Now the second major option, which is to fix the competitive markets, this is the option that's being pushed by most major economists and

it's also where the independent system operator is going, because it's in charge of operating the grid in a competitive fashion.

And the main advantage of this is that going forward with competitive markets accords with the basic idea that where the technology is going is that we're able to build more and more efficient smaller plants. And to think that generation is a monopoly market no longer represents a technological reality.

Large providers have the option of going out there and building an electricity plant in their own backyard and starting to generate their own electricity, and when you have that type of technology it's very difficult to try to bottle up those options by having a single monopoly market.

Competition has worked well in other markets. It's worked relatively well in other electricity markets, though I think people frequently overstate the advantages of competition in electricity market, but there are the real potential in the long run for improving the efficiency with which the electricity sector is run.

And if we can also make it competitive,

those benefits can be passed through onto consumers. The main problem with that is no one really supports that. There's no bill in the legislature right now that move completely in this direction.

And the other major problem, which isn't economical but which is a significant problem, is that to have a competitive electricity market, the way regulation works is we see very much control over the regulation of the wholesale power market by the Federal Energy Regulatory Commission.

And we've had very deep rift between California policy and the Federal Energy Regulatory Commission. And there remains significant doubts about whether a productive, cooperative working relationship between California and the feds can be worked out in the near future.

The other real problem with getting a competitive market to work is that all the pieces must fit together. There is a concept in economics called the theory of the second best. In general, the idea is that markets do a good job of promoting social efficiency, and that having many producers compete with one another and

consumers choosing between producers is a way to maximize social welfare.

There's an important caveat to that. It's that one competitive market may not work very well if related markets have structural impediments to competition. And the problem -- and this is really quite an entrenched problem for electricity markets because it's not a single market, but several very tightly intertwined markets together.

There's the wholesale market for power, there's ancillary markets for things called regulation and to make sure that the reliability of the grid is maintained. There needs to be markets for the transmission of electricity over the transmission grid.

There needs to be markets so consumers can actually make choices between different providers, and you need a whole set of financial markets where you're not only buying electricity on the spot market, you're buying electricity today to use it today, but options to buy long-term contracts and future contracts where you're buying electricity in the future.

A problem that we have is that some of

these markets develop more quickly than others. California did a good job of having a wholesale power market developed and operating in 1998, but we did not have very active consumer choice. And it was that imbalance between those two closely intertwined markets that was one of the contributors to the energy crisis.

This suggests that, if we go back towards building and relying more on competition, that policy makers are going to have to pay very close attention to a transition strategy such that we can create wholesale power markets, but we make sure that we develop all the other markets that have to be well-designed and competitive to make the whole electricity sector work well.

There's also a more fundamental problem. That the last three years, with FERC hearings trying to figure out whether there was market manipulation, really asked the question how well can political entities regulate competitive markets.

A critical part of a competitive electricity market is that it's going to be volatile. That sometimes the price is going to be low, and at other times the price can be very

high. And the multiples can be quite significant.

Differences between $20 per megawatt and hundreds of dollars and even thousands of dollars per megawatt. Now that type of volatility actually plays a critical role in the way the electricity markets work. Those price spikes tell the generators when it's important, when they should start planning to build new capacity.

So you have to have those spikes in the market to send the right signals to have investment. But at the same time, if you have price spikes, sometimes those price spikes are not caused just through the proper competitive operation of market forces, but are caused through market manipulation.

And then we have the problem -- can regulators differentiate between the normal operations of competitive electricity markets versus market manipulation.

And if they're not successful at doing that, it really draws into question about whether we're going to be able to use these wholesale price signals to send the right signals to electricity generators of when they need to build additional capacity.

The last option is just to have hybrids. And that would be -- and the major one of these that I'll talk about just to cut my comments a little bit short -- is that we could have a system of regulation for certain customer groups -- small residential and small commercial -- and allowing competition for competitive access for others.

There's a bill that just passed the assembly by Keith Richmond -- I believe it's number 428 -- that essentially tries to build that type of hybrid system. The advantage of these hybrid systems is that you can try to mix and match what goals that you're trying to do.

Try to get some efficiency from the large users, but protecting the smaller users from price volatility. The main disadvantage of these hybrids is that they create this juxtaposition where some services are regulated and some services aren't regulated, and trying to police that boundary between regulated and non-regulated markets is not something that we've ever had a good case of doing in the United States -- either in the electricity sector or in tele-communications or in any other sectors.

So what are some of the things that we

need to do no matter what? And one of them is we need to make demand react a little bit more to the cost of supply of electricity. That we -- the cost of using electricity changes dramatically from hour to hour and from day to day.

And usually it can be very expensive, topping over a dollar per kilowatt hour during a hot summer afternoon, but in the middle of a winter afternoon it can be as inexpensive as two cents per kilowatt hour.

But right now we have a system where none of these incentives are passed on through to customers, so they don't really have any incentives or any real facility to save money by using less electricity on hot summer afternoons, and trying to shift some of that electricity use towards the nighttime.

Now, we should be trying to institutionalize this type of demand management. And for everyone who, their first reaction is we can't do this, it's just much too difficult, I just have a couple of comments.

During the summer of 2001 California had great success in reducing its peak load demand. And in fact customers came back and said it did

not constrain their lifestyles very much.

The CEC commissioned a survey of people in Southern California Edison, and 70 percent of the people who responded to the survey said that their conservation efforts had either no serious affect on their lifestyles or even slightly improved their lifestyles.

We also just have ways with new technology and with new pricing options that we can pass on these incentives to users without necessarily exposing them to wildly fluctuating bills where in the middle of the summer they get a much higher electricity bill.

And then the last thing that I'll just state very quickly. Six or seven years ago the state of California had a relatively simple regulatory structure divided between the Public Utilities Commission, which regulated the price of electricity, and the California Energy Commission, which had a number of planning functions.

But through restructuring and the response to the restructuring we've greatly multiplied the number of agencies that are involved with this. And we have a number of overlapping responsibilities.

And there's been a number of significant policy failures in the last two years because of conflict between these agencies. So there's a real need to streamline some of these. There's a bill that did pass the assembly just recently to create a cabinet-level energy department, but it actually seems to streamline things but doesn't, in my opinion, streamline them in a way.

And I also have a problem that it puts the cart before the horse in that I think that we really need to decide what the policy environment is going to look like before we actually try to redesign the institutions that are going to govern electricity policy.

So, sorry for going a little bit long. But just to run up -- in the next few years the state can go in any direction, trying to rebuild the market or re-regulating the electricity is not going to have significant effects on California consumers.

But in the long run, the direction where federal policy is going, there are very strong forces that competition in the market is going to re-emerge, and we need to think about policies that allow us to have an evolutionary path where

we can start building and facilitating that competitive environment.

Fragmented regulation has led to major policy failures, and that has to be fixed. And then the most important thing that California needs to do to improve its investment environment is to forge an incentive between the major agencies and the legislature. Any questions, please?

CHAIRMAN BOYD: Larry, we have a problem with our next speaker. So we need to hold the questions, if you don't mind, until the end of the panel section.

MR. WEARE: Okay.

CHAIRMAN BOYD: My apologies, but maybe you can note your questions, and at the end maybe we can have a round table discussion with all the panelists. We do have some logistics problems that have developed with the panel.

MR. BAIRD: Thank you, Commissioner. Our next speaker is William Hauck, known to most people around the Capitol over the last three years as Bill Hauck. He is President of the California Business Roundtable.

Bill is also the founder and major

shareholder and a member of the board of information for public affairs for an organization called Statenet, which over the last 30 years has built a business that is now in all 50 states, and collects every bill, every amendment to every bill, and every budget item in every state.

So if you are a policy junky, he's got the network for you. Statenet also owns California Journal. I had the good fortune of meeting Bill many years ago when he was my boss under both Speaker Moretti and Leo McCarthy. Welcome, Bill.

MR. HAUCK: Hello, everybody. I'm sorry, I'm the cause of the lack of questions there. I have to be in San Jose at 2:00. I'm on the CSU Board of Trustees, and I'm Chairing the search for a new president at San Jose State.

I was going to fly, and they called me this morning and told me the airplane was broken. And there were no other airplanes to take me down there. So I have no alternative but to drive, and I think all of you know what that's like.

I was asked to try to present briefly here the business perspective on energy, and I will try to be brief. I think the previous

speaker has made a number of the points that I think are important. I want to re-emphasize a couple of them.

I think the first question that we always ask ourselves with respect to an issue like this -- as well as others -- is whether we can actually take some positive steps to ensure Californians they will have adequate energy in the absence of a crisis.

It seems like all of us are driven by inertia until we get to a crisis point. Notwithstanding all of the good advice and counsel the Energy Commission gave to the governor and the legislature prior to our electricity crisis, that data, that advice and counsel, was apparently not sufficiently heeded, so we got ourselves into a position where we were in the middle of a crisis.

And then we did what we normally do in this country in crises, we tend to overreact in the middle of a crisis and apply remedies that ultimately don't work very well for anybody.

So, from the standpoint of the business community, when you go back to the move to deregulate energy prices, and the provision of energy in the state, the principle objective at

the time was to lower rates. And I think that should remain the principle objective today.

What's happened since is that we've not lowered rates at all, and in fact we've increased rates significantly. We've increased rates particularly to heavier users, and business users, and manufacturers, by as much as 100 percent or more.

And given all the rest of the things that are happening in this state with respect to the cost of doing business in relation to our competitors -- and we do have competitors, the states of Nevada, Oregon, Colorado, Utah, are significant competitors.

And one of those states -- I believe it's Nevada -- has a full-page ad in the current Southwest Airlines magazine trying to attract California businesses to move to Nevada.

What those states can offer businesses is stability, lower cost of doing business, lower cost of housing, lower taxes, and in some instances specific tax incentives that make it very tempting for a business that's located in California, if it is at all able, to move the business to Nevada, or to one of these other

states. That's competition.

And for many years the people across the street at the Capitol felt that California didn't need to bother with that. This was such a natural market, and such a huge market, that businesses would want to locate here, notwithstanding any other conditions.

Well, if that was true at one time, it's certainly not true any more. So we've got to be mindful of the fact that states are competing and taking jobs out of our state. And this is at a time when our population is growing on a net basis each year of about 600,000 people.

We have a net growth of 600,000 people each year. We need to be able to provide housing and jobs for those people. In order to do that we have to retain businesses here. It's the private economy which is primarily the driver of those jobs.

If you look at the last few years, at job growth in California -- and certainly there has been job growth -- the job growth has been predominately in the public sector.

However you feel about that, the point is that job growth in the public sector is not

going to drive to stabilize the underlying private economy which is crucial really to everything we do in the state.

So with respect to energy, what's the first thing that needs to happen? I think you've heard the discussion on the market. Clearly, we need to figure out what kind of market scheme we are going to adopt.

We are sort of in limbo as far as I can see at this point. And what that leads to is uncertainty. And the worst possible condition for business investment in a state is uncertainty.

Uncertainly, unreliable government circumstances, expensive cost of doing business, is not a set of conditions that is going to attract any entity to invest, for example, in the construction of new plants.

The companies, the energy companies that bought plants from the utilities, largely bought plants the utilities wanted to let go that were at the time probably average age of 30 years old. A plant at 30 years is not going to operate as efficiently as it did when it first opened.

Those companies are all in financial trouble at this point. And we have a real

question whether they will be able to continue to operate. You all, to some extent, you folks certainly -- Bill -- are the experts on this subject.

But from a business perspective, when you stand back and look at that picture, the picture is not one that would provide much of an incentive, if any at all, to invest hundreds of millions of dollars just to build one new plant. And from the things that I've read recently, it's clear that down the road we are definitely going to need new supply. And the new supply is going to have to come from substantial generation.

It does not appear that we can supply a population that's growing at a net 600,000 people a year with alternative energy sources. And it seems that even though we can do better with respect to conservation -- and California's demonstrated that it could do that without any real harm to their lifestyle -- we still will need new supply.

Should the government build new supply? Should it be build by the private sector? Should it be a partnerships between the two? What will

the market look like? These are all questions that need to be answered now, so that supply, when it's needed, is going to be there down the road.

It's not unlike other infrastructure problems that the state is facing. In many respects, turning the energy situation around, at least as to supply, was capable of being accomplished faster than we can accomplish turning around other infrastructure problems that clearly are things that we deal with every day.

Transportation, school facilities, housing -- if you want to put that into the equation. These are all things that cannot turn on a dime. In many respects we did that with respect to energy.

So I think that what the businesses are that are here -- and the businesses that might be thinking about locating here -- are looking for is a coordinated effort, a rational effort by the state in the direction of a market that will be stable, that will provide incentives to invest, and that will lower their rates.

In face of the competition which I spoke of, it seems to us that that is a critical element of this picture. I think I'll leave it at that.

I'm happy to answer questions if you have any, and I appreciate the opportunity to be here this morning.

MR. GOLD: Do you have any data to substantiate the statement that the additional generating capacity cannot be supplied from sustainable alternative sources? I've read papers to the contrary. Thank you.

MR. HAUCK: Well, I don't have any data with me. But I know that California -- to start with, California has traditionally been an import state. Which is to say that we have imported about 20 percent of our power from other locations.

And that there's never been any expectation that we would be able to supply more than about, at the maximum, about 20 percent of our power from alternative energy sources.

The difficulty with continuing to rely on 20 percent imports is that the places we were getting that energy from, notably Nevada and Arizona, and actually a couple of other states, have experienced even greater growth than California is presently experiencing, and need to retain more and more of that power.

We also, I think, as you know, are very dependent on hydroelectric power from the northwest, and we are very vulnerable when that hydroelectric power is not fully available to the state. That increases our need to import power. So we are in a vulnerable position. We can't rely, in my view, on the reliability of being able to import power to the extent that we have in the past. We need to deal with that question.

I don't propose that we would never import power, but we need to be mindful of that problem.

MR. BAIRD: I think our next speaker will also address some ideas that I think will address the gentleman's question with regards to what you can do with efficiency and conservation as well.

MR. HAUCK: And he's probably far more qualified to do that than I am.

MS. HICKS: I'd like to ask if whether you have in hand any assessments of the possibility of what percentage of our energy needs might be filled if we had solar rooftop generation on all of our government buildings and our schools

and our manufacturing plants and our homes?

MR. HAUCK: I don't have the answer to that question. i think it's a good idea to do those things. I think we ought to do as much as we possibly can in that regard.

But I don't believe that -- even if it's done on a widespread basis -- I don't believe that it will be sufficient to satisfy our needs to the extent that we would not need to build additional major generation.

MS. GRIFFIN: Good morning, I'm Karen Griffin from the Energy Commission staff. In answer to the question that you were just given -- the Energy Commission has those kinds of estimates and will be presenting them in a workshop, oh dear, on the 24th of June. And the information is also available on our website.

A question for you. When you talk about a desire for a stable market, does that include the concept of continued direct access or a core/non-core, so that --?

MR. HAUCK: I think we need to look very carefully at the ability to attain direct access, yes. I think in the future that might actually be a greater answer to some of the supply questions

than alternative energy sources would be.

And there is, in most of those instances there is economic incentive for an entity to develop smaller power plants that they can use for their own purpose and perhaps to wield some of the excess power onto the grid.

MS. GRIFFIN: Thank you.

MS. TURNBULL: One more quick question. Jane Turnbull from the League. Could you give us some idea of your position in terms of SB 888?

MR. HAUCK: The Roundtable has not taken a position on that measure, and probably will not. Every investor-owned utility is a member of the Roundtable, and in situations like that I normally let them work out their own positions on specific bills.

MS. TURNBULL: Can you make any statement in terms of your position on re-regulation?

MR. HAUCK: I don't think we can go back there. I don't know what the scheme ought to look like, but once -- I think it's been said, once the genie's out of the bottle we can't put him back. We need to find, I'd say, a compromise, a middle ground, between where we were

before deregulation and the experience we had with deregulation. It seems to me that's probably where we're going to wind up.

And I don't know specifically what the ingredients of that are, but we certainly need to figure that out. And it's part of this whole picture of trying to stabilize the provision of energy in the state.

I think we definitely would favor a rationalization, a consolidation, of energy agencies at the state level. And with a director of a department of energy that is appointed by the governor and is confirmed by the Senate.

So that there would be one person that would be accountable that hopefully would be able to work out some of the rivalries between the various agencies, and certainly also be more effective in providing one voice on energy policy as it pertains to the federal government.

I think that alone would be a real benefit for California. We've created these entities sort of en seriatim, by the legislature, without regard to trying to reconcile what we've done before. That's not atypical of what happens in government, but the result -- at least in this

state -- I don't think is good for anybody.

I think we have a very mixed-up and confused situation, and voters are hard-pressed to know who to hold accountable.

CHAIRMAN BOYD: Thank you, Bill. Larry, I think we should just go on and hear Ralph now. And then do questions, before we lose the panel.

MR. BAIRD: Our next speaker is Ralph Cavanagh, senior attorney at the National Resources Defense Council. Ralph Cavanagh is the co-director of the NRDC's energy program, which he joined in 1979.

In addition, Ralph serves on the U.S. Secretary of Energy's Advisory Board, and the Board of the Electricity Innovation Institute. And he's the Vice-Chair of the Portland-based Bonneville Environment Foundation, and the Center for Energy Efficiency and Renewable Technologies, which we fondly know as CEERT.

Ralph has also been a visiting Professor of Law at Stanford University and the University of California at Berkeley, and Lecturer at Harvard Law School. He's a founding board member of the Northeast Energy Coalition, and of E-Source, a Colorado-based energy services company.

His awards include the prestigious Heinz Award for Public Policy, and the Bonneville Power Administration's Award for Exceptional Public Service. He received a Bachelor's and Law Degree from Yale University, and welcome back.

MR. CAVANAGH: Thank you. I think I'll just sit right here. You can all see me pretty well, and you won't have any trouble hearing.

And look, let me begin just by saying that the Natural Resources Defence Council is a national environmental organization, but 110,000 of its members live in California, so a wholly disproportionate share of its resources -- and I have a feeling I have a few members out there in the audience.

I also want to note that very gracious introduction mentioned the founding of the Northwest Energy Coalition, which NRDC founded with the League of Women Voters 21 years ago, covering the four northwest states.

It's especially special therefore for me to appear at any League of Women Voters forum. The questions have been superb. Chris has laid a great foundation, as has Bill, and so I will be relatively brief so we can get back into the

discussion, and get into more detail as to what's of greatest concern to all of you.

What I thought that I would contribute to this forum -- first of all, I'm going to be a bit more cheerful than Bill, and I think for reasons he wouldn't wholly disapprove of.

I'm going to focus on what I think both NRDC and the League of Women Voters view as the largest, cheapest, and most environmentally benign source of electricity supply for the state of California, and it's not a power plant of any vintage or megawattage or technology.

It is of course the collective contribution of improvements in the efficiency of electricity use. And one can go across the whole, every sector of the California economy, to find illustrations of how we have mined energy efficiency historically to substitute for more expensive power generation in California, and to open the way for what I profoundly hope will be a sustainably based electricity future for the state.

My favorite illustration is the good old homely refrigerator. Which, 25 years ago or so, back when Commissioner Rosenfeld was just hitting

his stride, used an average of just about 1,800 kilowatt hours per unit for the typical upright, frost-free, cornerstone of the American quality of life.

And here we are 25 years later, and the average new American refrigerator is bigger, it's better, it has more features, and it uses one fourth as much electricity as its counterpart of 25 years ago.

And the reason for that is a whole host of very well-coordinated policies in terms of incentives, in terms of efficiency standards, in terms of technology research. Much of it spearheaded right here in California.

And the difference between that 1970's vintage refrigerator and today's is tens of thousands of megawatts nationally. California's leadership in energy efficiency over the past 25 years is worth celebrating.

When Bill worries about how are we going to compete with Nevada, how are we going to compete with Arizona -- we're not going to out-compete them on cheap natural resources, we're not going to out-compete them on how rapidly we're going to race to deplete what we've got left in

the ground and in the water.

We're going to compete with them on quality of life and brainpower and, yes, energy efficiency. Where we are the undisputed national leader. And the handouts that I've given you give some of the illustrations for how much more work we get out of a typical kilowatt hour, in terms of economic value.

How much less we use per capita. We are different than the rest of the country in energy efficiency, and it is to our enduring economic benefit that we are. And we were different as of the year 2000 when the electricity crisis began. And here there's something important that I want to say that I think hasn't been said enough about the crisis. Plenty of people have written about what went wrong, and you've heard a fair amount about that already this morning.

But I want to say just a word more about what went right when we were really tested, and about some of the people and one of the institutions in particular that hasn't gotten enough credit, because we happen to be sitting in its conference room.

I will maintain in a moment, and I don't think I'll get a lot of argument in this room, that what happened between 2000 and really the present was quite simply the most successful statewide energy conservation campaign ever conducted anywhere, and we had to have it.

At the moment when it had to begin, in the middle of 2000, I think it is fair to say that the state of California faced the worst combined economic and potentially environmental crisis of our lifetimes.

Very few people know how close California came to having electricity and natural gas shut off all together. We had to have a spectacularly successful, statewide coordinated effort assembled on the fly, using all of our great infrastructure for sure, because we knew a lot about how to do it.

We were already the leading state. But to take the leading state to a new level. That required real innovation and leadership, and a wholly disproportionate share of that came from the California Energy Commission, and its staff and its Commissioners.

And not enough people have found public

occasions to say thank you, and I wanted to begin by doing that. And then I wanted to go over just a little bit of detail and emphasis about why we need to say thank you to this institution and these folks.

In terms of what the state of California collectively accomplished. I've written a couple of reports on it. For those of you who want the latest one, it's summarized in the handouts that are in the back.

It's on the NRDC website at NRDC.org, and it's also carried on the website of our co-author -- and you'll love the co-author, it's the Silicon Valley Manufacturing Group. And it was a very productive exercise to write that report with them.

Here's what we found. And most of the numbers are stolen shamelessly but with full attribution from the California Energy Commission. In 2001 -- now remember, this is a year that begins with warnings of rolling blackouts.

This is the official predictions, from the national authorities that run the national electric grid, California will have a minimum of 250 hours of rolling blackouts, each one affecting

an average of two million people, starting in May and continuing through the rest of the year, and that's if the weather is normal and if the economy stops growing.

In 2001 the weather wasn't normal, it was hotter than average, and the economy slowed down, but it didn't stop growing, it continued to grow through 2001. So we start off with a somewhat adverse situation. What does California do?

California reduces its total electricity consumption by six percent in 2001, compared to the previous year. In the four hottest months of the year, the critical period of testing, electricity use is down eight percent -- and this is use across all hours.

Peak use is down even more, by the equivalent of at least five thousand megawatts, ten giant power plants. No advanced economy has ever accomplished anything like that in history. The rule of thumb is -- and you've heard it several times today -- a healthy economy has to increase its electricity use every year. That has been the historical record of every advanced economy in the post-war era.

This is the decisive counter-example which I'm hoping will reverberate for years to come. This was a remarkable achievement. And it required, obviously, the collective efforts of all Californians.

But the Energy Commission, through its work with efficiency standards, through its coordinated efforts with other California agencies -- and here another remarkable and I think uncelebrated achievement.

For 25 years, I have watched the two most important state energy policy institutions in the United States, bar none, and both in California. They're the California Energy Commission, and the California PUC, and they have gotten along about as well as cats and dogs on a bad day, and that was the universal history for a quarter of century.

I mean, one can invoke platitudes about why can't we all get along and still recognize it's an important state, these are two enormously powerful agencies, they have some overlapping jurisdictions, and they don't have the very smallest egos in the state of California serving on it.

For them to work effectively together is a challenge. It is a challenge that this particular group has risen up and met, and they are working together, and it is an enormous -- one of the reasons to be more cheerful about our future prospects is this new coordinated effort that the Energy Commission, the PUC, and the other state agencies have been making together.

And it's part of what fuels some optimism that I have about the future. And let me now just say a few words about the future. About what we have to do now as we come off of a remarkable record that shouldn't for a moment make us complacent.

A lot of that was driven, as both Bill and Chris have pointed out, by an unprecedented crisis. We do not want to be on the brink of catastrophe in order to get Californians focused and in order to get this kind of conservation performance.

We want to hardwire more to fit, and we do indeed want to use conservation as a cornerstone of our resource acquisition strategy, we want to make sure that we never again face anything like what we came through in 2001 and

2002.

In terms of the single most important thing that I think we need to do. It doesn't have to do with any particular theological affinity for any particular technology, it doesn't have to do with any numbered bill in the legislature, it has to do with a very fundamental policy choice that I think surfaced in different ways in both Chris's and Bill's presentation.

But let me now make it very explicit. The question is who is going to make the choices about the long-term investments in California's electricity future that will determine whether we rely on renewable energy and energy efficiency or new highly efficient combined cycle gas, or some combination, or we go with good old-fashioned pulverized coal, which is still the preference of some of the folks who are bringing you your NPR news every morning.

And the fundamental thing to recognize about the -- California made a remarkable decision in the mid-1990's about who is responsible. And California's decision in the mid-1990's was nobody's responsible. We're going to throw it wide open.

Historically, for a century before the mid-90's, the answer to that question, who's responsible for the long-term investment decision, who is responsible for creating the portfolio of resources that's going to meet our electricity needs.

The answer was, California's Investor-owned utilities, under the supervision of the Public Utilities Commission, and California's publicly owned consumer utilities, under the supervision of their local public power boards.

And those were the institutions, love 'em or hate 'em, that had to make those decisions. And those were the institutions that had the capacity to make the investments that built the electric generation and energy efficiency base of the state of California.

And a cornerstone principle that they had to follow in making those investments, starting in the early 80's, was they had to treat energy efficiency as the equivalent of a power plant.

If they could find ways to improve efficiency, to pay all of us to use electricity more efficiently, and the savings were cheaper

than a power plant, they were supposed to invest in the savings first.

That was a fundamental principle of the California system of electric resource portfolio management that had evolved by the mid-90's. And heaven knows, utilities went up and down in their performance.

We had droughts, and we had good years. We had regulatory policy that sometimes wobbled around. But that was a fundamental principle. The resource portfolio management responsibility was in the utilities, and the utilities had to treat energy efficiency as a resource in meeting that responsibility.

Now in the mid-90's the crucial -- I think the most important single decision that California made was -- we don't want the utilities doing electric portfolio management anymore. We would prefer each of you to go out and do it in the marketplace.

And we are confident that, if we throw open the market for electric resource portfolio management, a whole host of new competitive actors will emerge with what -- in the memorable phrase of one regulatory agency, not this one -- were

better skill sets than the utilities.

I remember I was having a debate sponsored by the League of Women Voters on the advisability of this future, and I was trying to poke some skeptical holes in this notion of this brave, new world of competitive resource portfolio managers that all of us were supposed to pick from the privacy and comfort of our own homes.

And so what I said to the speaker was, all right, I understand this notion that everybody's going to come flooding out with all of these exciting new electricity options, just tell me concretely, what's in this for my mother?

And he was ready for that question, he'd probably heard it before. And he said, "for the first time in history, your mother is going to be able to hedge her fuel price risks in the marketplace."

And I am gratified to say, since it was a League of Women Voters forum, that the exact reaction that you have provided to that answer -- and I assure you I have delivered it faithfully -- was the reaction that the audience gave.

It became clear, and it became clear in subsequent years, that we all had full lives.

That we really didn't need to go out and hedge our own fuel price risks in the market.

And you know, however we felt about PG&E and Southern California Edison and Sempre and SMUD, on the whole we were prepared to delegate that task to them, and beat them up when they did a lousy job of it.

That is why, in the year -- I mean, the fundamental reason why things went so completely haywire was there was no resource portfolio management going on. And Chris has said, you know, why weren't utilities signing long-term contracts.

Well, a good part of the reason was that the California decisionmakers had said "utilities, you don't belong in this. Enron will sign the long-term contracts. Dynergy will sign the long-term contracts. Other competitive suppliers will do it. You utilities, get out of it."

Now the fundamental decision that has been made since the catastrophe, and part of why I'm more cheerful -- and this is the point on which I want to close and then open up the discussion to all of you -- is that I think we've made a firm decision in California that we're

going to go back to utility based resource portfolio management for most of us.

If there really are large customers -- and Bill still thinks there are -- who want to have the stimulation and excitement of hedging their own fuel price risks in the market, well let 'em. And more power to them.

But I'll tell you, once they're gone they don't get to come back and piggyback on all the rest of us. Once they're gone, they can go out and face those risks, they do not get -- what we do not want to do, it seems to me -- is let them bounce back and forth.

Take advantage of the investments made for all of us when the times are hard out there in the market, and bounce out for a few months or maybe a year when things look good.

The decision we have to make now is for those of us who are prepared to entrust to the utilities sector the future of electric resource portfolio management, what we have to make sure is they're operating under the right incentives with the right policy guidelines.

And here, this is the good news. The legislature has done a lot of work in the last

three years, a lot of it good. In 2000 the legislature dedicated a small part of every utility bill, about a nickel a day for the average household, to future investment in energy efficiency, renewable resources, and high-tech R&D overseen by the Energy Commission.

Now that decision, a nickel a day per household -- it's a big state, a lot of households -- six billion dollars over ten years. The largest investment in sustainable energy resources that any state has ever made. A good down payment, not enough but a good down payment.

The legislature has also established goals for renewable energy generation in California at double the current level, most of it over the next decade. Again, a good down payment.

And that effort has already begun. But I think the most important thing the legislature has done is to make very clear that the fundamental responsibility for electric resource portfolio management for most of the system, is back with the hometown utilities.

It's back with the PG&E's and the Edison's, it's back with the Sempre's and the SMUD's and the DWP's. And right now our most

urgent challenge is making sure that they do a good job.

Is making sure that the tools that have been developed in the state of California, with the help of the Energy Commission, are in fact deployed to squeeze every last kilowatt hour out of the system.

How much more can we do right now? I hope that the Energy Commission will use as its starting point in this wonderful integrated analysis-- which, by the way, we all owe a vote of thanks to Senator Boan, whose SB 1389 is pushing us to make this inquiry -- how much more efficiency is there?

Use as a starting point, only a starting point, a down payment, the new assessment that was done for the Energy Foundation -- and PG&E had a lot to do with getting it started, which we all appreciated.

An independent consulting group called Xenergy conducted the study with a lot of help from a number of others, some in this room. Their minimum estimate is that we should be quadrupling our current level of energy efficiency investment in the state of California.

That our down payment, our minimum level of investment, can be increase fourfold, without using up all the cost-effective opportunities. That the economic benefit to the state of doing that over a decade is 12 Billion dollars.

And I hope at minimum the Energy Commission will make sure we get moving in that direction through all of the means available to it.

And that also the Energy Commission will apply equal pressure -- and much of this pressure has to be of the bully pulpit sort because the Energy Commission has limited regulatory power -- but in this comprehensive assessment we've got to keep equal pressure on our investor-owned utilities, our PG&E's and Edison's and Sempre's, and our publicly-owned utilities, our SMUD's and our DWP's and our cities in Palo Alto and Silicon Valley Power.

Because I think it's good to have the competitive forms of ownership in California. I don't have theological preferences for one over the other, but I want to make darn sure we hold them both to a high standard of performance.

And what I'm heartened to see, and can

report to you all today, is that investor-owned utilities have stepped up and offered to increase their energy efficiency investments substantially.

About more than 70 percent over the next five years. That offer is pending before the Public Utilities Commission. The first step in the direction of meeting those targets that the Energy Foundation has identified through that new study.

I'm waiting to see what our friends in public power are going to step up and do, and I hope that questions goes back to them with a vengeance from the folks in this room. In addition, and I think this is the point at which I want to close.

There's one other very important thing we need to do to make sure we're back on track to good resource portfolio management. We've got to do a better job of getting the incentives right for the portfolio managers.

I think it will shock everyone in this room to know that there were two common features about electric resource portfolio management in California, starting in the mid-1990's and through the height of the crisis.

One was that there was no financial incentive whatever to invest in energy efficiency improvements, and in fact their were automatic losses inflicted on utility shareholders every time efficiencies improved.

Not a great way of mobilizing utilities to squeeze every last kilowatt hour of savings out of the system. In addition, there was no financial reward for doing good resource portfolio management. Good resource portfolio management was just as profitable as bad resource portfolio management.

Meaning nothing, nada, at best you got your costs out. At worst you took a bath. It was -- the incentive philosophy I guess, some people in the utility sector kind of ruefully said was that the philosophy was that the flogging will continue until morale improves.

But what there wasn't was any decent -- all of us have I think some fundamental sense that incentives that are key to performance really do generate better performance. We have conspicuously failed to provide those incentives to our resource portfolio managers.

We need to do it, even as we need to

move. And the good news here. On the problem of the utilities automatically losing money on energy efficiency, the Public Utilities Commission is in the process of solving that problem.

They've committed to do it. It's required now by California law. And I've included in your package a simplified illustration that just goes through the mechanics of how you fix that problem. It just takes very small regular adjustments in electric rates to do it.

It's an easy problem to resolve if you're committed to doing it, we're committed to doing it. What we haven't done yet is to create those performance-based incentives tied to efficiency, tied to renewables, tied to getting a better and more sustainable, and I will just say, Chairman Keese and Commissioner Boyd and Commissioner Rosenfeld, I hope that that is also part of what you look at in the integrated assessment.

And I hope that as you look at that -- and here I'm going to break with the whole tradition of the world of utilities for 100 years -- let's have performance-based incentives.

The history of incentives in the utilities industry for much of its decades in existence was you paid them based on how much iron they put in the ground, and how much money they managed to spend. And the more iron and the more money, the more their shareholders got.

Well, that doesn't strike anyone in this room I think as self-evidently a brilliant way to create the best possible kind of performance in the sector. And when I talk about getting the incentives right, I want to be clear.

I'm not talking about going back to where we were. I'm talking about a new system that really does try to focus on what's the benefit to the system, what's the benefit to the customer, and can we find a reasonable way of sharing that between the managers of the programs, the shareholders if their are any, and the customers as a whole.

I think I'll leave it at that. But will you all allow me -- I've got to stand up to do the last thing I need to do, which means I hope I can go off the record for a second, and I'm not going to do anything appalling.

But by way of symbolically making this

vote of thanks that I started with real, what I want to do is close by presenting a copy of -- our report with the Silicon Valley Manufacturing Group is called Energy Efficiency Leadership in California -- again, all of you can get it off the website.

But I wanted to take my one hard copy, and just as a symbolic affirmation of who provided a lot of that energy efficiency leadership, give it to the Chair of the California Energy Commission, with all of our thanks.

CHAIRMAN KEESE: And I would really like to introduce Commissioner Rosenfeld, who I'm sure a lot of you know, but has joined us and is sitting in the front row here.

COMMISSIONER ROSENFELD: Thank you, Bill.

MS. TURNBULL: I just want to make one quick comment. Carl Guardino (sp) is a member of our League of Women Voters.

MR. CAVANAGH: I'm not surprised to hear it.

CHAIRMAN BOYD: Okay, thank you Ralph. Larry, I guess you want to mentor the questions/comment period?

MR. BAIRD: Okay. First of all, thank you, Mr. Cavanagh. Thank you, Dr. Weare. Would the Commissioners like to begin with questions, or should we move to the audience?

CHAIRMAN BOYD: I have a couple of questions, thanks for the privilege. Chris, I find your description of what has happened quite interesting, and I don't disagree with it.

Before I became a Commissioner, and was a Deputy Secretary at the Resources Agency, I could go around giving speeches on what I thought went wrong with the restructuring system and not be held accountable. Now I have to be careful with what I say.

But one of the things I used to say, with regard to the design, is it's a product of the political process, which usually means it's a committee process, which usually means you tell somebody to design the equivalent of a horse and you get a two-humped camel.

And in this case this is what we got, and it doesn't travel as fast, and doesn't follow directions as well, etc. etc.

But that's just a crude analogy, but I was wondering, with regard to the shortage of

generation issue you brought up, in my energy avocation prior to coming here it seemed to me in studying the design of the system -- which fortunately I had nothing to do with, I was over doing air quality stuff most of my career -- and it seemed to me that during the debate over deregulation, that that debate chilled all investment in new regulation.

It's not so much -- well, I think the PUC stopped telling people to build generation because the debate was going on -- any interest on the part of anyone else was chilled in my mind by the fact that this debate was going on.

I'm just wondering if you have that same view. Is that being one of the ingredients of what went wrong?

MR. WEARE: If you look at the market prices. If you're able to sell your wholesale power at only $35 per megawatt, there's not a lot of incentive to go out there and build a large gas generator.

You're not going to make -- so the market was telling people we don't need added generation, which was true. One of the reasons that this restructuring occurred is that we had an

excess supply of generation in the mid-1990's in California.

The political uncertainties were compounded. And it was also compounded by -- now I'm forgetting the name of the proposition -- but there was a proposition in 1998 to eliminate the payback of the stranded cost, which also increased the level of uncertainty.

But if you go back, and go back through the Energy Commission records, people were planning new capacity. They had applied for the certificates, they were building that capacity. One of the interesting things if you look at it though, is that most of that capacity was planned to come online in 2002.

There was about 3,000 megawatts, I believe, that was on target to come online in 2002, and it did. Late 2001 and 2002. And it did. So, in some sense, both uncertainly and the state of the markets delayed investments.

People didn't think there was a profitable opportunity to provide electricity before late 2001, and it just happened that the market tightened up very much a year earlier.

And it's very possible that if you had

just pushed things back, and the California economy did not boom as much, that the drought was not as bad, that if it had pushed us over the hump that that new generating capacity would have been available.

MR. CAVANAGH: But if I could, Commissioner -- but however one feels about that hypothetical, I think what's undeniable is, where we are today, if you want to build a new power plant you need a long-term contract with a credit-worthy buyer.

And the only credit-worthy buyers that are emerging -- not just in the west, but across the country -- are the hometown utilities. A fundamental proposition of the old restructuring model, the so-called Merchant power model, was that if you simply opened up a wholesale market for electricity people would build power plants, would invest in long-term infrastructure for that market.

And I think, Commissioner Boyd, at least for the time being -- and I think that will extend for a number of years -- that fundamental tentative of the old restructuring system is dead as a doornail.

If you want capitol to do anything substantial -- from energy efficiency to renewable energy to a new combined cycle gas plant -- you've got to have that long-term contract. That ties you back to that resource portfolio manager, which I hope will be getting the right instructions from the Energy Commission and the PUC.

MR. WEARE: Let me just add that any economic market that involves large capital projects, we witness boom and bust cycles. In commercial real estate, the real estate rents go up for commercial real estate, they build a lot of office spaces, all of a sudden there's a glut and rents come down.

You see the same thing in the construction of microchip plants, and I could go on and on. What's unique about electricity, and what really causes these problems, is that if we're going to rely on these market signals you can expect a jagged investment cycle.

In all these other markets what you have is very heavy response on the demand side. So when market prices for office space go up people either economize on the amount of space that they need or they move elsewhere.

It's just much more difficult in electricity, and why having conservation measures is so much more important is that for, on the demand side, for us to balance out and respond to a more jagged investment cycle.

CHAIRMAN BOYD: One other question for the two of you. The fact that California had to take out a very expensive mortgage to bail itself out, which mortgage has to be paid for.

To me, again, in this modern day, has a chilling effect on our ability to do a lot of the good things that you do if you were starting with a clean piece of paper.

I'm wondering what your thoughts are about how to deal with that mortgage, and how it is affecting our ability or inability to design our future?

MR. CAVANAGH: It's clearly a problem. We have an overhang, we made a lot of commitments very quickly, and those commitments do have to be repaid. The renegotiating of the contracts that's now going on will help, it will reduce the burden.

It's also having the effect of somewhat reducing some of the automatic so-called take or

pay features of the contracts that were a particular problem in terms of constraining resource investment.

In terms of energy efficiency investment in particular, I don't think it's a fatal problem because we have not -- the energy efficiency opportunities are so substantial, and the financing mechanism we have is so robust. Basically, we've been on a pay-as-you-go basis for energy efficiency for 25 years in California. We don't build up big debt to do it. We pay, in the year we incur the costs, the full amount. And then we get the benefits over, in many cases, multiple years.

So it's heartening, Commissioner Boyd, to see -- as I said, the California utilities have already stepped up and offered to increase their levels of energy efficiency investment by 80 percent.

For renewable energy it's going to be in some ways more of a challenge, because there we do need long-term contracts, we do need the ability to spread those costs over multiple years, and we've got utilities trying to enter into the contracts who are under tremendous pressure in

terms of their own credit-worthiness.

One thing that will be very important is finding a way that works for both the utilities and the state Department of Water Resources to transfer the burden of those contracts from the state Department of Water Resources to the utilities.

I think that that is a challenge that needs the full engagement of both. And I hope the Energy Commission can help -- not impose a solution, but help all parties to find a way of doing that that minimizes the burden on the utilities that we are expecting to take on these additional obligations.

But the fundamental point is that, obviously what was done with those contracts is part of the portfolio going forward. We have to accommodate it.

Our task is to devise the best investments we can for the remainder of the portfolio, and the good news I think, looking out over the long term, is that this overhang is going to be with us for a limited and known period of time, and that the extraordinary promise of the investments we've been talking about is going to

extend over decades beyond that.

MR. WEARE: Again, a little bit of history. This is our second overhang in a single decade. In restructuring there was a large amount of stranded costs, mainly the contracts with qualifying facilities, and the cost of nuclear plants.

And it was paying down those stranded costs that led to a number of regulatory decisions, and many of those regulatory decisions were exactly the things that complicated the market and regulatory structure and exacerbated the crisis.

In particular, that was the incentives for having this very, very high reliance on short-term contracts, because they thought that it would make the paydown of those stranded costs more transparent.

I think one of the most important rules, but again one of the most difficult ones, is the principle that everyone in this state, all electricity users, are responsible for these debts incurred by the crisis.

And to create a system where, whoever you are participating electricity from -- or you

are self-generating -- that you are required to make contributions to the cost of the crisis which are really social costs and not the private costs of getting electricity in the future.

And that's going to be very important because many people right now -- and certainly these large industrial users -- have very strong incentives to make energy generation or self-generation decisions just to get out of the system of buying electricity from utilities to lower their prices, though that's not necessarily the most economic of decisions from the state's perspective.

CHAIRMAN BOYD: Thank you both. Bill, any questions?

CHAIRMAN KEESE: Following on your question, I guess I'll ask you both. You know, when we got out of stranded assets we adopted a four-year timetable. As I recall, San Diego did it in two and a half, and there's an argument that the other utilities might have done it in three and a half but it was never recognized.

There were suggestions when we were in the energy crisis that we bring in a lot of quick fix, that we import generators on a two-year basis

and pay a high price then. We chose a different route with long-term contracts.

Is there a reason why we should try to shorten the time that we now have, that this yoke that we have hanging over us which I guess is no longer 20 years, is ten years minus whatever we've done. Is there an incentive to try and figure some way to shorten that?

MR. CAVANAGH: Well, Commissioner, you are asking fundamentally a portfolio question. And I think -- so what should the portfolio look like? How much long should we be, how much short should we be, what's the mix?

And I think at the moment -- it is easy to say in hindsight that California went far too long at the height of the crisis. It is also important to remember that at the time there were very few reasonably priced short-term options.

Nobody had ever seen a wholesale market go crazy like this before. To me, the most important lesson from all that is the importance of making sure the system never gets overstressed again, which to me means a redoubled emphasis on energy efficiency, because we now know more about its hedging value that we ever knew.

Also, there's increased value that we didn't know about before to renewables, because they also help give us some hedge against this fuel price volatility. And in the context of all of our efficiency and renewable energy options, then certainly from my perspective there is every reason to try to do what I think the governors office as been assiduously doing.

Which is indeed to renegotiate these contracts down so that the terms are shorter, and so that, as I said, the "take and pay no matter how much you use" character of those contracts is reduced. And so I applaud that.

The most recent settlement announced with Alleghenies is in that direction. And what all of that will do is open up more opportunities to add more efficiencies and renewables to our portfolio and that's the place where I think recent developments tell us we need to do better.

MR. BAIRD: At this time we'd like to open the hearing to the audience, and would you please speak into the microphone, as I'm learning to do. Also, in order to make it easier for our Court Reporter, could you identify yourself. Any questions?

MR. BROOME: One of the aspects of this whole market situation that I don't think has been mentioned this morning -- it may be clearly in mind with some people -- but I think storage is an unknown element in the california electricity market.

PJM, where perhaps I'm more familiar, they have many pump storage plants. The people at LA department, the chief engineer there told me that their most profitable, in a sense, facility, is Castaic pump storage plant.

I raised this issue during the energy crisis last year, and I was told by the Department of Water Resources that they couldn't operate San Luis or the two upper reservoirs in a pump storage mode every day, because they'd have no way of charging for the lost energy. Interesting point.

However, I do think that California needs to consider energy -- not only the established methods of doing storage, but the upcoming technologies which are only now in research stage, which involve very few losses.

And I do think that the ability to instantly come online with a capacity that is no startup time, can go right out, is going to increase

reliability of the system. And the economics I think will prove out to be well worth the loss of the 20 percent of power that you don't recover. I'd like you to please consider that.

MR. WEARE: I think an important step towards creating incentives for those solutions is going towards more realtime pricing, where individuals and large customers would have their own incentives to provide those pump storage capabilities.

If by generating electricity during the day when prices were high they were incurring very large savings, and then they would buy electricity in the middle of the night to actually pump the water up, that would be a big boost to trying to promote those technologies.

MR. BROOME: I think compressed air energy storage is the other technology that needs more attention.

MR. CAVANAGH: I'm in accord with what both of you said, but I want to add this caveat. If your view is that we as utility customers, as part of the customer base for utilities, should be paying for that so that the utilities should be adding that to their portfolios and calling on all

of us to provide the capital, since they have no money of their own except what they get from us.

I just want to make sure that all of the options have a competitive opportunity. The same instantaneous response capacity that you mentioned is, for example, available in demand response in buildings -- a great favorite of Commissioner Rosenfeld's.

I look forward to a world in which demand response in buildings competes on equal terms with all the other options, and we pick the best buys first. And you are right to say that these are all intriguing ways of dealing with peak power problems.

Remember though that they don't deal with our fundamental baseload problem. We also -- in addition to shaving off the peaks -- want to do everything we can to reduce our overall electricity needs.

And the exciting thing about where we're going now -- and I'm hoping that the Energy Commission plan will be the best articulation yet -- is that we can identify a whole host of options for both reducing peak and improving baseload energy efficiency that collectively gives

us the richest portfolio of energy efficiency options of any state, and a chance to enhance our competitive advantage there.

MR. WEARE: Underlying these comments is very much the idea that there are many options for both electricity generation and conservation efforts that can be implemented in different circumstances.

And the overarching problem that we have are getting the incentives right, and also being able to compare these on a realtime basis.

One real opportunity that there is is really implementing a much higher degree of intelligence -- of computer networks, or computer control -- in the electricity system, so that we can automatically implement these types of load management technologies or pumps generation, depending on what the situations are.

The Department of Energy is very much now looking into trying to greatly expand how much electronic control we have over the electricity system. And this is very likely an area where California could lead also.

MR. ABELSON: My name is David Abelson. I'm serving as Senior Staff Counsel for the

Integrated Energy Policy Report. I have a couple of observations that I'd like to ask both Professor Weare and Mr. Cavanagh to respond to if they could.

And it goes to this kind of broad question of should we go back to a regulated system, should we have a government operated system, should we have a hybrid system, or should we have a pure market system -- which I think is a pretty core policy question that the state is grappling with.

These are observations that I've made as a non-economist, so I'm wondering if you could shed a little light on this. Mr. Hauck said that the main motivation of the business community is to get rates down.

And something I've never understood -- if you had a regulated rate of return that was pretty moderate, at seven or eight percent, and some inefficiency because it was guaranteed, and you traded that off by putting it into the private sector, where the inefficiency presumably got squeezed out, but the uncertainty produced a need for a much higher rate of return, because of the uncertainty.

Just as a matter of economic theory, and particularly with the inability to do storage, how did you end up in theory with a more efficient system? I never got that. And my other observation -- and this would go to you Mr. Cavanagh -- was that Mr. Weare says that the very nature of large, industrial capital expenditures are boom and bust.

Supply and demand prices will vary greatly. Your comment during the presentation was that the public is not the least bit interested in long-term hedging contracts. Which is it that we want in California? Because it seems to me you can't have -- you have to make a choice.

MR. WEARE: I am certainly not a market ideologue. And I think you can get the strongest claims that electricity markets are certain to outperform traditional rate of return regulation from people with an ideological position.

And even the major names, people I have a huge amount of respect for -- Severn Borenstein (sp) -- has generally strong faith that markets will work better, yet really hedges his opinions quite strongly when you push him on it.

Because, if you think about this from a

static perspective -- will a deregulated market do better next year? And I think the answer is no, we don't have any strong evidence that a deregulated market will do better next year.

The real question is can a deregulated market outperform it over the long run? And here the questions are the real idea that if you have deregulation, which enables people to bring new ideas on to the marketplace without regulatory approval, without getting them into the concept of an energy portfolio, can we increase our rate of technological innovation?

And that's one of the most critical areas. So one of the great hoaxes, that we were able to improve the rate of technological innovation in the electricity sector, which might have improvements over very much the long run.

The other question is can we make the demand side more responsive through market competition? There's a lot of potential energy efficiency by making the demand side more responsive.

To be honest, this can be done without competitive markets. You can -- the Public Utilities Commission could say, okay, we'll have something along the lines of realtime prices, or

there are other options that Commissioner Rosenfeld is far more knowledgeable about than I am.

Where on hot days you do pay more for electricity. And we asked people to respond to that. That does not depend on competition. History tells us, though, that regulatory commissions don't really want to do this.

So in some ways people have been arguing for competition to get other changes in the marketplace that actually could be implemented within a regulatory regime.

And then the last area where it does seem to be possible is just how productively people operate electricity plants. And the evidence is suggestive that when you really strengthen up the profit incentives that people can operate electricity plants more efficiency.

They keep them online for more days per year, and they -- this is in a competitive environment -- and they can increase their heat rates. At the same time, whether we can actually create a system which passes through those benefits to consumers -- in the short run there aren't going to be benefits passed through to consumers.

So you either have to believe that this is going to be a long run improvement, or the arguments for market competition are relatively weak.

MR. CAVANAGH: But I think there actually is a way forward here that really is a hybrid in the best sense. And, by the way, the Commission's framing of the question uses the word hybrid system a little differently than I'm now about to, and David, I encourage you to consider this as what we really mean by hybrid.

There is no reason why we can't have -- and California was evolving toward -- a fully competitive, wholesale electric marketplace in which there's competitive -- electric generation doesn't have to be a monopoly, we know that.

Competitive participants in a wholesale market can duke it out, give us the benefits of innovation. The one thing that I think we need, though, in order to remove the destructive characteristics of the boom and bust cycle, is a portfolio manager.

Is a long-term investor, is a utility system acting on behalf of all of us. We don't want to hedge our individual fuel price risks,

David, because we've got full and busy lives. But we sure would like somebody to do it for us.

And my argument is that the competitive model we should be moving towards is regulated utility portfolio manager, making its choices in the competitive wholesale generation markets. And bouncing those choices against the energy efficiency investment opportunities available to the regulated portfolio manager.

And then hopefully getting something like the best of both worlds. You use that competitive market to squeeze down the cost of generation, and actually get to generators operating more efficiently as long as the traders aren't shutting them down to push up the wholesale market price, and Chris has told us how to avoid that.

But at the same time, you have somebody who's job it is to look long-term. To have a mix of short and long-term investment. To put up some capital at a time when wholesale prices are low to hedge against higher prices tomorrow, next month, next year.

That's the hybrid model that California I think is embracing today, and I hope the Energy

Commission will push it along.

MR. BAIRD: Jane?

MS. TURNBULL: I guess I personally am a real supporter of demand-side management and the extent that we can push it to, to new lengths that we have not even envisioned at this point. And I think our computer capabilities will allow us to move in that area.

The development of new leaders indicates that the capability is probably with us at this point in time. But my point at this -- the reason that I'm here right now -- is to say that part of the electricity system is the transmission and distribution system.

And there hasn't really been a lot of attention given to that today. I am concerned that there are existing bottlenecks, and I am also very concerned in terms of the decision that was made with regard to Path 15, which means it's not going to be a CPUC-managed line.

I think that transmission requires at least as much lead time as generation, and it needs to be incorporated in the whole, and I'm not sure what we can do to foster investments in transmission.

CHAIRMAN KEESE: For the panelists, I will just observe -- the day before yesterday we had a full day's program on electricity. I know you joined us for the natural gas one -- but we had a full day on electricity. And an hour or so which was taken up with the issue of transmission.

MR. BAIRD: One comment, please? Dave Hawkins is here for the ISO today. And a representative of the ISO will be in our afternoon transmission and distribution breakout group. And we've also invited guests from the PUC to participate in the breakout groups.

CHAIRMAN KEESE: Thank you. I would like to make a comment here. When we talk about competition, and we talk about regulation, and we talk about deregulation, and we talk about restructuring.

I think an important ingredient is that we have a lot of competition in what we are referring to as the old regulated regime. We did not have a totally deregulated market after we did the restructuring.

So, in a sense, we had a form of hybrid before, and we have a form of hybrid today. And we're talking about another form of hybrid. I

know we use these terms about regulated and deregulated, but it's not clear to me that we ever -- we weren't even close to a totally regulated market, and we didn't come close to a deregulated market. Is that fair?

MR. GOLD: My name is Stan Gold, and I'm from Petaluma, California. I would like to focus attention a little bit on a longer term vision. Consider this: experts tell us that, under best estimates, we have about 35 years of oil left. Some say that's wrong, it's probably more than 40.

Let's assume that's way off base. Not by ten, 15, or 20 percent offbase. Let's assume it's 100 percent offbase. That would say that we have between 70 and 80 years of oil left.

Consider that you have a grandchild born next month, and lives to a ripe old age. During that lifetime of that baby, of that individual, oil will disappear. Now, you are making plans for three years, five years, ten years. And then comes the mad scramble as prices begin to skyrocket because the amount of oil left is being rapidly depleted.

In the lifetime of the child born next month, there will be no oil, and what will the

fuel sources be. Well, there'll be about another 100 years of coal in the ground. But more than likely, what we are told now is that oh, we can't possibly rely on sustainable energy sources because at best we can get 20 percent out of it.

Well, I'll tell you that our grandchildren are going to get 100 percent out of it. Not by choice, but by lack of choice. There won't be anything else but solar, wind, and wave. I want to take just one moment to tell you about wave. This is the least discussed.

The California Energy Commission made a $120,000 grant in the spring of 2002, to a Professor of Mechanical Engineering at San Diego State. The purpose of the grant was for him to find the best locations along the California coast for setting up wave energy conversion stations, and there was more to the program than that.

It was a nine-month program, a 12-month program, I haven't seen that report. I don't know what's happened to it. But today, off the coast of Scotland, on the Isle of Skye, there are over 400 families, with the communities industries, shops, and all of it, that rely 100 percent of ocean waves for their electrical energy

generation.

In addition, they produce enough excess electricity to pump it back into the Scottish National Grid, for which they are paid. In addition, there is a consortium forming to use still more excess energy for the purpose of hydrolyzing water to manufacture hydrogen for the new hydrogen economy, and that is bringing income to the town.

So what we're talking about here is not something new. In 1991, a report from PG&E said that the wave energy off the California coast could produce something like 23,000 megawatts, if it could all be harnessed.

Naturally, they can't all be harnessed. Because if it could all be harnessed, then we get enough electricity for 23 million homes. The estimate was about 20 percent of it could be harnessed.

What I'm suggesting is that you take the longer term view. That you've got to stop thinking about fossil fuels as being the major component of our energy program. That you've got to start thinking in terms of a phase-out policy, a long-term phase-out policy that begins now.

And it has to appear in current legislation, because you can't suddenly go into panic mode in 20 years. Well, you can, we've done that in the past, but that's not the best way to do your planning.

MR. BAIRD: Could we get a short response to this, and then --

MR. BROOME: I think I'll stop here. I think you've got the drift of where I'm going. Thank you very much for listening.

CHAIRMAN BOYD: Let me just say for the gentleman in the audience that we just can't cram into this one-day session all that's involved in this Integrated Energy Policy Report is exploring.

What the PIER research program does at this agency -- and I'd just encourage you to browse the website and learn more of those things -- we've put several years into looking at wave energy.

It's -- everything, unfortunately, is dictated somewhat by economics, and its day will come. I encourage you, when this agency and the Air Board soon release their reducing dependence on petroleum report, that you and others in the public give it some support.

Because it's being mightily battled by those who would lose a piece of the action. And I encourage you to watch this space, so to speak, in terms of technology.

I mean, a lot of us here at the Commission are technology wonks, and are really interested in pursuing advanced technology. It has to fit into the economic scheme of things. And that's what we try to do.

And I agree with you, I hope that this new planning process allows more searching into the future, in terms of where we need to go.

MR. BAIRD: I'd like to thank our two guest speakers this morning, and especially like to thank Mr. Cavanagh for returning early from France, and I wish Bill Hauck could have heard the rest of this. We will report back to him.

We are going to have to adjourn at this point in order to be back at one, unless you want to entertain a couple of questions?

A couple of housekeeping items. When you come back at one for the breakout sections, you have to have a badge if you're in the second or third floor conference room. So just ask the security guard for a badge.

The public is invited, and so are the League members. If you are a League member, Karen and I would like to meet with you briefly before you adjourn to lunch. For everyone, there is a list of restaurants within walking distance on the back table. And we will try to get to the breakout sessions at one. Thank you.

(Off the record.)

MR. BAIRD: Welcome back. We are going to start with brief summaries of the three breakout groups. And after that we can ask a few brief questions before we wrap the day up. We will begin with Valerie Hall on the demand-side management group.

MS. HALL: Good afternoon. Can you hear me, am I speaking close enough to the microphone here? In the demand-side management group we had a series of questions that were listed in the agenda that we pretty well walked through.

There actually is one question that we did not get to, and I'll explain that as I go along here.

The first question had to do with to what extent can the state rely on demand-side management to reduce simmer peak and winter peak

for electricity and natural gas?

We actually found this question a little bit overwhelming to begin with, and so we sort of stepped into this by first looking at another question, which was how much should we ask consumers to alter their pattern of behavior?

And we talked about the fact that education programs that were out there during the crisis really provided a value for people to recognize that they can change their patterns of behavior, or re-institute sort of older patterns of behavior, of remembering to turn out the lights when you leave a room, individual actions that one can take using their behavior to help modify the use of energy that they use in their homes and/or their businesses.

And they thought about providing educational information, continuing to do that, was very important. The group also thought that, coupled with education, that incentives play an enormous role in getting people to recognize that it's important and providing that tangible incentive to have people take that positive action.

Whether it's to go out and purchase a

higher efficiency appliance, or something else. Another thing that came up during the discussion about asking consumers to alter their patterns of behavior is to teach those patterns of behavior early.

That these are values and ways of doing things that really need to be taught to children early. So whether it's certainly the responsibility of parents, but either -- if that does not occur to reinforce those concepts.

The group thought that teaching energy efficiency and the idea of conservation and the better use of resources was important to be brought into the schools and into the educational process. And encouraged the Commission and others to help see that something like that can happen.

We then went on to a discussion about price signals, and whether or not we can rely on price signals. And this was an area where the group was very clear. They thought that price signals, meaning the price that they are charged for their individual use of electricity, is very important and very clear.

It needs to be made clear and it's a very important mechanism for helping to achieve

energy efficiency. They all agreed that realtime meters -- or some sort of variation of realtime meters with a realtime pricing coupled with that -- was really key. They felt that it helped to really empower someone if you have the right information.

So, again, information became a very important aspect of the overall concept that having realtime pricing and realtime meters is one thing, but you really need good information that helps you to understand how you're using energy in your house -- which appliances are using the greatest amount of energy, and when they're using it. Are they using it on peak or what?

So that that information -- that instantaneous, clear information coupled with realtime pricing, was felt to be a very important aspect of energy efficiency and conservation for California by the group.

We talked a little bit about the benefits and costs that are involved with demand-side management. And we really talked probably primarily about the benefits. We talked a little bit about the fact that some of the benefits that are associated with demand-side management are the

reduction in using precious resources.

And that they felt that if utilities and others were providing this information more that in reducing the use of energy that you're helping with an overall portfolio of options to provide energy in a responsible manner to California, that that might be a good thing to be doing.

We talked a little bit about what the key features are of an effective delivery system. And again, information once again came out as a high-priority item for the group. That information is truly key. Good, clear information that you can use to actually make decisions and modify what you're doing.

Either your behavior in the building you're in, your home or office building, or being incented through good information to make purchases of high efficiency equipment. That information is truly key.

The group in general thought that the utilities were a good source of information, that that's a trustworthy source of information. As far as delivering, or helping to encourage people to make good choices and to purchase high efficiency equipment.

Rebates certainly came out, incentives, but rebates specifically came out as a key mechanism for encouraging people to do the right thing.

We also talked briefly about the fact that that first cost is the thing that overwhelms people, and that the rebate is a way to help reduce that certainly, but they suggested that rebates should be made instant.

You shouldn't have to fill out a form and send it away and wait for 60 to 90 days to receive your check in the mail. But that some sort of tear-off coupon that you hand in as you purchase the equipment and it's taken off the price, or you get back a little check right there is a much better way of doing it.

We cycled back at that time to try to talk about what extent should the state rely on DSM to reduce summer and winter peaks for both electricity and natural gas.

And the group seemed to think that the state should rely on DSM, that they felt that the current level of funding, and therefore the current level of anticipated efficiency that is achieved through the current funding, is what the

state should be relying on.

They were a little uneasy to increase that amount of funding. That perhaps some modest increase was appropriate. They were concerned about the suggestion that was made earlier this morning about a fourfold increase.

They thought that relying on the current amount of funding and efficiency was appropriate. However, they really thought that this should be coupled with statewide realtime pricing and realtime meters.

They really though that is something that should go throughout the state, and should not be offered only to some select or small group of commercial establishments. They are interested in seeing that become the norm statewide for both commercial and for residential customers.

Although they think the rates and incentives -- you know, the rate for that, and the information that comes with that, and the way the information is displayed, needs to be very different between commercial and industrial organizations who have staff available to interpret and manage that versus an individual homeowner who would need to have very clear and

simple information and be able to make appropriate actions. And that's where we concluded.

CHAIRMAN BOYD: Thank you.

CHAIRMAN KEESE: I do have one question. Either for you or for your group, because you emphasized many times realtime pricing, and that's very interesting.

Recognizing that, our evidence suggests that realtime pricing allows one to probably reduce their bill by about six percent if you flatten it out. You pay about six percent for the insurance of having flat rates.

Was there a -- everybody was willing to pay realtime prices, or was this an option and you should have the option to have a flat, pay a flat rate. Was that discussed?

MS. HALL: Well, I think you may have someone come up -- I'll try and do a quick summary, and then we may have someone come up and augment what I say. In general, I thought the group was interested in having realtime pricing. That every person should have realtime pricing.

There was a concern, however --

CHAIRMAN KEESE: As an option, or --?

MS. HALL: I actually felt that it was

that it ought to be mandated, or it should be the norm. But we didn't get quite that specific. So I'll let others come up.

But one of the concerns was can everybody afford realtime pricing. And for somebody who is on a limited income and who may have some health problems, the concern was raised if realtime pricing would increase dramatically the cost of using air conditioner on a hot day, and you needed that for your own health, the concern was raised should there be an exemption or some way of not requiring certain groups of people from the potential of having a significantly higher price during peak.

CHAIRMAN KEESE: An opt-out. Okay.

MS. HALL: Well, we need to -- unfortunately, you have to come up to the front and use the microphone.

MS. BERGEN: Okay. I'm Jane Bergen. Perhaps this definition of realtime pricing -- there may be some confusion here. Our understanding, I think, based on our discussion, was that with the realtime pricing meter you would have the option of using the power at the peak time or not using the power at the peak time.

Is that --

CHAIRMAN KEESE: Exactly. Exactly right.

MS. BERGEN: Well, in that case then, you would necessarily have to accept the flat rate that you were referring to at the peak period. If you didn't use the energy at the peak period then you could avoid that --

CHAIRMAN KEESE: Your rate would go down. But the person who opted out and said I just, I don't want to pay any attention, I just want to pay my bill, they will generally pay on the average about six percent more for that privilege of not worrying about it.

MS.BERGEN: Oh, sure.

CHAIRMAN KEESE: But the person who does choose not to run their air conditioner on the hottest day --

MS.BERGEN: Then they will save money.

CHAIRMAN KEESE: Will save money.

MS.BERGEN: Okay, that's our understanding.

MR. CUNEO: My name is Rico Cuneo, I was part of the same group. My interest in the realtime pricing in terms of our discussion was if

you have a desire to change behavior patterns, cost issues aside, you need to be able to pass information on to the consumer.

It doesn't make any difference whether he's saving three percent, five percent, or 50 percent. If you want to have the opportunity to actually alter his behavior at certain times during the day, the residential consumer needs to know what his load profile looks like.

How you get him that information, whether it's with a realtime meter, whether you do a low profile by district plot, by section, however -- he just needs to know what you're talking about.

And then, when the price issue becomes an issue, and the price between noon and 3:00 is a dollar a kilowatt hour, well then you're talking about a lot more than six percent savings. And you'll probably find him just shut off the power at the breaker and leave his house.

And you'll get the behavior you want.

CHAIRMAN KEESE: Thank you.

MR. BAIRD: Our next presenter is going to be Jim McCluskey, on the transmission and distribution improvements. Just a brief summary,

Jim?

MR. MCCLUSKEY: My name is Jim McCluskey, I'm with the Energy Commission. I work out of the Engineering Office in the Assessment Siting Division. We discussed a number of points. Actually, our workshop or breakout group was a little more free-flowing than I had expected it would go. Probably due to my lack of skill in --

CHAIRMAN BOYD: Are you saying you lost control?

(laughter)

MR. MCCLUSKEY: I wish I were saying that. Actually it was a fairly well-controlled group, but I think the discussion went reasonably well.

In the most general sense I would say that if we were to put this in the context of the questions that were asked of the group, the division of an electricity system and hence the type of transmission system that we would like would be kind of a concern that it be reliable, low cost, environmentally friendly, and where the public would have considerable input, or at least some input in shaping that system.

The concern here was simply to have

results, and the interest here was simply to have those kinds of results rather than to worry about a regulated system versus a deregulated system or a competitive system or some other hybrid. I think that was the general focus.

To the extent that transmission and different models of the electrical system are dramatically interrelated, I think we could say that -- I guess the issue came up here as to whether or not, or the type of vision of transmission that the staff more or less envisioned both the staff and the independent system operator who worked with us on this, not worked with us on this, but who participated in the breakout session -- I would say advocated a reasonably robust transmission system.

And I think that would be more associated with competitive or at least hybrid types of markets, where you have a bulk power system that can enable competition, reduce congestion, reduce market power problems, and address those kinds of issues.

So that's one point I think, that was made. Another point that came up was, given if we put it in a logical context, given that as a

vision as to where to go, the logical thing to do would be to talk about some of the impediments to that. And that came up.

One of the concerns most often expressed was with regards to transmission planning and permitting issues, the question, the problem of public information -- and I think that's something Valerie just mentioned -- but public information was not terribly available.

Or if it was available the public is not that interested or enervated in this process. So there was a concern that, because of a lack of public information, I ask if better public information, better informed public would help facilitate or reduce some of the impediments to transmission planning.

And they argued, at least some argued, that it would be very helpful. So, I guess a question for us as an agency is how to better inform the public, or to help better inform the public about transmission issues.

One of the concerns that we've had in our group with transmission is that, while the benefits of transmission expansions can be statewide or regional, the costs are often viewed

simply in the terms of local areas, and local participants. So someone benefits, and someone pays. And I think that's true of siting most energy-related facilities.

Another problem area that was addressed was the permitting and planning process. Someone wanted to know whether or not the existing transmissions planning and permitting process was so fragmented that it involved the Energy Commission, the ISO, and the Public Utilities Commission.

And our response was well, not really now, but we'd like to see it probably move in that direction. Currently we have the CPUC and the ISO involved in the permitting process and the planning process to some extent. And there is probably a need for a, well, there's a need for a more informed, better long-term view in that area.

One of the things this Commission is doing is proposing a process to address that issue and make the transmission permitting process itself a little more user-friendly. Those were major issues.

Another issue that came up -- again with regard to incenting transmission expansion -- was

locational marginal pricing. I think that probably came up in every area where you talk about realtime pricing and incentives to stimulate investments in either transmission or DSM or realtime pricing. And so that was important.

Some folks thought or argued that perhaps locational marginal pricing would be sufficient in and of itself to incent investments in major transmission, both power projects.

I think we talked about that a bit, and many argued that that's not necessarily here but in other places as well that realtime pricing, or locational marginal pricing, is not by itself sufficient to incent investment in transmission expansions. That there needs to be a backstop approach that probably does involve greater public investment in transmission.

So that was another point that came up. Another point was the interchangeability of transmission generation. Folks think that generation and transmission are almost invariably interrelated. They are interrelated, but they're not necessarily interchangeable.

There are a number of functions that transmission facilities perform that generation

simply doesn't. So, that's probably the sum and substance of the issues that we addressed. One of the -- Connie Lenny of our staff took excellent notes on a computer, as she usually does -- and so we'll have those notes available for distribution to the Commission and the Commissioners and to the League participants as well.

MR. BAIRD: Thank you. See, you had more control than you realized, as a former college professor. Would anyone like to add any brief comments to Jim? Jane?

MS. TURNBULL: Jane Turnbull. I guess one other point, Jim, that I was impressed with -- and as I walked out of there even more impressed -- was the planning window that transmission requires with respect to other aspects of the energy systems, and the need for public information and public understanding in terms of the scales of time that are required. You finally begin to look into the future and play visionary. What's needed is going to be 20 years hence. And to get the public involved in understanding that, and appreciating it, and supporting something that's so far into the future is a very real challenge.

And, in a sense, just like demand side planning, we've got to bring the school kids into this, so that they understand that they're going to be part of this future, and they've got to understand this future early on.

Most of us who sat there today, 20 years from now aren't going to be around when some of these lines go in. But it's our children and our grandchildren will be.

MR. BAIRD: Thank you, Jane.

MR. GOLD: Stan Gold, Petaluma. I didn't attend the panel, but the idea just occurred to me from what I just heard. If the planning for the transmission systems go out 20 years hence, 20 years hence our oil supplies will be considerably more depleted than today, and we will have many more distributed systems.

And when you have many more distributed systems your need for long distance lines are somewhat diminished. Has that factor been taken into account? Thank you.

MR. MCCLUSKEY: I think folks recognize that problem. Perhaps not in a 20 year timeframe, but certainly within shorter timeframes where transmission planners have to address issues all

the time.

In fact, one of the more difficult issues that they have to address is that generators can locate anywhere they want. Transmission planners, in some cases they don't always locate in the optimal location area to provide, to access transmission resources.

And transmission planners have to try to predict in the future where those will locate. So there's a planning dilemma there. I'm not sure that addresses your question, but what your suggesting is something of a different type of problem.

MR. HAWKINS: Dave Hawkins, ISO. I'd also like to comment on that. Twenty years from now we are going to make optimal use of every renewable resource possible. And when you think about wind generation, wind generation has to be sited in those areas where the wind blows a lot. So if you're going to go to the Carquinez Straights, or you know, bolt them on to the mothball fleet, or you're going to go to the Tehachapis or whatever, that's where the wind generation has to be sited.

And the geysers, another example. We're

going to make optimum use of it. So the transmission has to be built to pick up these types of facilities wherever these renewable resources are, in addition to any other types of plants we're building.

So we have to think about optimum use of the wind parts and other types of resources, and then how to get that energy out to the load centers, wherever they'll be.

CHAIRMAN BOYD: Jim, could I ask, did your group -- it sounds like they got pretty thorough in permitting and siting and some making the connection between where the resource has to be, where the optimal location for resource versus the transmission resource.

Did folks get into the -- and I don't know how to say it any more politely -- the NIMBY issue? You know, not in my backyard, as an issue we deal with. I'll speak personally now.

I think the terrible land use planning processes of our society, coupled with the fact there's 35 million of us -- not the 20 million when i first started in government -- makes it very difficult. So the desire for more information and greater participation in

permitting of anything I can understand.

By the same token, it really gets tough when "yes, I want the resource but don't put it in my backyard please" enters the discussion. Did you folks talk about that dilemma?

MR. MCCLUSKEY: Well, we talked about it briefly. I'm not sure that we arrived at any conclusion, but I think that we did recognize in the group that the impacts of transmission development tend to be local at times, although they are also quite linear in nature.

But the benefits of transmission expansion can be more regional and California-wide. And so accessing regional markets, accessing remote markets within the state can produce, provide low-cost power to reduce pricing problems in remote areas.

In San Diego, for example. So, I think we did get into it, we went into it in that level of detail.

MS. HICKS: Maybe this is the appropriate time to bring in an issue or an element of all this that I haven't heard any reference to today, and I would like very much to become a major part of this vision of the future

that we're working on.

The advent of the terrorist age, in which we are the global target, is, I think, invalidates so much of our basis of planning in these matters, because -- and I speak from experience, because I live two miles from San Onofre, and when the homeland defense people said that the nuclear power plants were the most vulnerable target that stuck with me.

And I think that if we go along thinking we're going to have more centralized power sources -- the fossil fuel and the nuclear -- for very long, I would agree with my colleague here that we are wasting precious time that should be spent on putting in the source ones, like using the heat and the cool from underneath the earth in our construction.

The solar generation on the roof, the co-generation in the manufacturing plants, and so forth, that our investment -- we've talked a lot about investment -- our investments must be in those.

And I see the Energy Commission as being -- the two, both of the Energy Commissions -- as being the ones who should be raising that cry,

that call, to the public to urge the moving ahead in that area. Because California is sort of the Paul Revere in this.

If you're familiar with the energy bill that is in the Senate right now, the whole thrust of that is to put billions of dollars into new nuclear power plants and new fossil fuel and so forth. And a few million on the other side, the alternate energies.

And that bill has in it the potential for taking away from the states the right to make the choices. And I think that if there isn't something done very quickly now on that, that we may not have the choice.

If they give the money to somebody to build a nuclear power plant, and he wants to put it on our coast, we won't have a choice. But anyway, I shouldn't have gotten into that.

What I wanted to say is that I hope that, in this vision of the future that you come forth -- and it sounds like it will be a beautiful document -- that there be a strong statement that our vision of the future is that we have the solar and the co-generation and so forth -- on all of our buildings.

And it seems to me that some of those billions that they're talking about back there in Washington should be designated for putting it on all the federal buildings, and all the county and city and school districts.

And that's -- I've forgotten completely, I'm getting old and lost track. Of course, if we have those on all these we really won't need that much more transmission lines.

CHAIRMAN BOYD: Could you give us your name, just for history's sake?

MS. HICKS: Oh, I'm sorry. Lyn Harris Hicks, Capistrano Bay League.

CHAIRMAN BOYD: Thank you. I think a lot of us agree a lot with what you have to say. Just to share some of our misery with you, and our difficulty.

The state legislature and the governor approved legislation to increase our renewables, which you heard a lot about today. Actually, the three energy agencies recently executed what we call an Energy Action Plan, and we stated as a goal to increase -- instead of waiting until 2017, to try and make that 20 percent renewable by 2010.

But, as I mentioned earlier in the day,

the dilemma that we created for ourselves makes it difficult for us to have that beautiful plan that you talked about. The perfect plan would be starting with a clean sheet of paper and just saying what the future ought to be.

And I'm not making excuses, or trying to throw up roadblocks, but this mortgage, this overhang that has been referenced so many times, really is a significant problem for us in terms of being able to accelerate investment in things like solar and what-have-you, which really are very high-priced electricity.

And so, the folks who, in toting up their electricity bills, don't like to pay high prices in the present. And people are not very willing to make long-term investments in the future.

So we appreciate your help, it's a tough row to hoe, and we appreciate the point of view you've described.

MS. HICKS: It's high-priced from the outset, but over the long haul it's the least expensive.

MS. HALL: Please, come to the mike --

CHAIRMAN BOYD: She's saying it's high-

priced from the outset, but over the long haul it's the least expensive, and she's right. But it's tough in our society of today's bottom line, and not tomorrow. Anyway --

MS. MAEZ: My name is Doris Maez. I was thinking -- before she got up -- too about the terrorist situation. And I think one of the -- and perhaps this came up in the risks and costs session -- but I think one of the things that has to happen is you have to factor in to any decisions you make the increased costs for security. Whatever that is.

And of course distributed generation reduces that risk to a certain amount. And I'm not sure if that thinking is included, and I would think it would be.

CHAIRMAN KEESE: It certainly is. And another thing on security is that a robust system gives you security. If you only have one line from point A to point B, it's at great risk. If you have two ways of getting from A to B, both of them are much safer.

Because if you wanted to do something you'd have to attack both of them. So, a robust system becomes much more immune to terrorist

activity than a single, point-to-point system.

MR. BAIRD: Our final presenter will be Karen Griffin on risks and costs to California ratepayers.

MS. GRIFFIN: I asked our group to function as a focus group representing community concerns. And we had what might be called a wide-ranging discussion of concerns.

One of the biggest takeaway points for me as a system planner was that system benefits don't stack up very well in the public's mind compared to local quality of life. And this came home the most clearly when we were talking about transmission.

It's ugly, it's risky, no one wants it in their back yards, and it's a very unifying factor in the local community that they -- in terms of opposing either transmission lines or desiring of an undergrounding of transmission line -- but it is definitely what is the local quality of life, how is the local quality of life being impacted.

The group came up with a couple of suggestions on how to help deal with that. Number one was there is a certain amount of education.

The example was given, why do we need new transmission corridors?

And one of our speakers said well, the answer is because we have this broken donut, and to actually make all the pieces fit together you can't just put more lines in the existing pieces of the donut. You have to fill in the rest of the donut.

That makes sense to people, they can understand that, but that isn't adequately conveyed. So there is an element of explaining to people why things are beneficial. There is also a strong emphasis on identifying tradeoffs, and institutional mechanisms for mitigation.

We had a long discussion on environmental justice, the fact that both power plants and transmission lines tend to be put in communities which are already impacted. So it's not just that it's a power plant or a transmission line, it's yet another thing going in to an already distressed community.

And so does the mitigation actually go to the locally affected community, or does it go to somewhere else in the basin? So to the extent that, as institutions are attempting to develop

system-wide solutions, that we pay particular attention to seeing that there is mitigation, whether it's road paving or replacement of diesels.

Those two issues came up in particular because there was a lot of emphasis on air quality impacts of diesel particulates -- health impacts. And to the extent that we can improve the -- well, lessen the particulate matter in local communities -- that could be seen as a definite local benefit for some of this system hardware overhead that we're talking about.

There was also a lot of support for alternative technology, such as you've heard from some of our speakers in terms of solar panels, additional research to bring down the cost on PV's, doing things with building standards, for alternative technologies.

Again, I think partially because these are again seen as local solutions to the problem, and not so much coming down from on high. One of the interesting discussions we had was on cost, in terms of when we started bringing up well, what are the main concerns? Is the concern reliability, is the concern overall cost, is the

concern price volatility?

The first answer was cost, but then when we pushed a little bit into that, and tried to figure out if cost was such an impact, what happened here when we just recently had a natural experiment where we had a 40 percent increase in residential costs, and up to 100 percent increase in small commercial costs.

You know, over the last year and a half. And we haven't seen some gigantic response from the community. The feeling was that there is so much inertia in the system that people will sort of take things for a long while.

And we probably benefitted in part from just sort of inertia. And people's busy lives, and they were not willing to deal with the cost of taking the time to figure out how to respond. In the residential sector, in the commercial sector, their community experience was that people were just passing along the costs.

So rather than making the commercial facility or manufacturing facility more efficient, the easiest way to deal with the problem was just to pass the cost along. And obviously that has implications for everybody's economy.

We talked a lot about volatility as a risk or a concern, and it was interesting to me that volatility is seen as very unattractive. At the same time we talk about demand responsiveness as being an attractive feature.

So it may be demand response, when you can control it, is desirable. But volatility, when you can't control it, is a very, very much disliked feature of the system. So in terms of what people don't like about the energy system, and uncontrollable volatile prices was a highly negative expression.

We wandered off and chatted about the business role in the electricity sector, about going to a core or non-core system would sort of reduce or increase risk to the bundled customers.

And we didn't reach a conclusion, but did have some discussion about who was cross-subsidizing whom in the process. The group was very concerned about environmental justice, and very concerned that it is a complicated system, that we do have to make tradeoffs, and probably only institutions can make those big mega-tradeoffs.

And that they expect institutions like

the state and the utilities to make those tradeoffs. And that's my summary of the notes. Other members of the team, the focus group? Larry?

MR. BAIRD: The only thing I would add to that was, in making the tradeoffs it was duly noted from the morning speakers that we now have a governmental system in which it's not quite clear who's going to make the tradeoffs in the future. And they want to know more about that. Anyone else care to comment? Robert, would you like to do a wrapup?

MR. THERKELSEN: Thank you, Larry. This has been fascinating to listen to, both the presentations in the morning and the comments from this afternoon. And one of the charges that Larry gave me was okay, see if taking everything that you've heard if you can kind of put it into a neat little package to hand over there to the committee to consider in their deliberations.

And that was a challenge. But let me tell you what I heard. And what I heard between this morning and this afternoon was the important policy goals we should be looking at are lower rates, reliability, security, efficient use of all

of our resources, stability with respect to both prices and policy, and probably most of all underlying all of this is the quality of life aspect.

That when we are considering our policies we need to be looking at who is making those investment choices, who is managing the portfolio, how long the contract should be for, and how do we preserve options so that we don't close out everything.

What I heard in terms of challenges or admonitions from the group is that we need to think beyond fossil fuels. We need to plan for future generations. And we need to leave the door open for all the alternatives.

All of that requires vision, something that -- I'll be candid with you -- is sometimes difficult for state agencies, for the government to have. The other things that I heard were the fact that information is important, information is important, and information is important.

And part of that, though, goes beyond that. Because information by itself is one thing, but it needs to be used to educate people. It needs to be used to provide incentives for people

in businesses, and it needs to be used to provide access to the decisionmaking process.

And probably the three last little points that I got, little nuggets that I got out of the discussion, were make customers a partner in determining and managing their energy use and their energy costs.

The second little nuggets was provide the public input into shaping the future energy system. And the last one was considering costs, benefits, and equity in terms of making the tradeoffs the government will be required to make.

So that's sort of the little summary I heard, and hopefully that captures a lot of the messages that you were trying to send us. And we will be paying very close attention to these.

With that, I will turn it over to the committee.

CHAIRMAN BOYD: Well, I want to say I appreciate everybody's taking the time to involve themselves in this issue with us. And to give us your insights as to some of the things that we need to address in dealing with this energy future in California.

Admittedly, there was a heavy basic

electricity emphasis today, and electricity in this state means it's joined at the hip with natural gas, so the two travel together.

Just to assure the gentleman who is quite concerned about petroleum, another leg on the stool that we're looking at is of course petroleum and where this state is going and where the country is going.

And fortunately the President saved us two or three years of public education by acknowledging that there's a hydrogen future out there. And when you hear it from the President you don't have to spend two years educating people on the need. If this President believes that's true, then the oil industry must believe that's true, and so there are steps being taken to fabricate the bridge to an alternative future.

But I agree with you, and to make sure we do it right. And just as a footnote to that comment, petroleum per se is not very important to California's electricity future because -- but fossil fuel is. We're so dedicated to natural gas, that's the thing that powers our electricity operation outside of the renewables arena.

And the good news is the world has far

more natural gas than it does petroleum. The bad news is most of it's not on the North American continent. So we do have to deal with the logistics of that situation.

But that's just another thing we're dealing with. I, like Bob, heard some of the very same messages -- information, quality of life, try to get things down to the local level.

And I certainly agree with the latter, because based on my many, many years on this planet I've decided we are still very tribal, and we still like things to be very close to the cage in which we live, and only occasionally gather around the bonfire to try and make progress.

So decisions aren't made at the local level. And one of my pet peeves, that you heard earlier, is land use planning decisions. Which always have been made at the local level.

And I quite frankly think, if done differently down through time, we wouldn't be wrestling with so many of the not in my back yard, or perhaps if Bill Hauck had stayed here longer he would have admitted that a lot of the industry people come to us and talk about not only NIMBYism, but BANANA -- you know, don't build

anything anywhere you know, so to speak, in this state.

That's what they sincerely feel some times. So balancing quality of life, and our needs for a lot of these things is quite difficult. And unfortunately, we can't pay for the good things we want to do if we don't have a halfway robust economy out of which we extract the dollar resources to pay for some of these things.

So we do have to mix quality of life needs with economic needs, and the need for a halfway healthy economy in this state. We will try to take all that you've said into account in designing our first Integrated Energy Policy Report.

I would caution you that it's been very tough on this organization and this staff to try and turn such a huge, huge issue around in such a short period of time, and they've done a marvelous job.

As I said at the beginning, this is the sixth or seventh consecutive day now that I have chaired a workshop or public meeting of some kind. Their pumping stuff out so fast that it's hard for all of you and all of us to keep up with it.

But they're doing a marvelous job in trying to give us insights on where we need to go with these issues. I urge you, beseech you, to stay closely plugged in to these issues, both at the state level and at the local level, and to try to make a reality of some of the issues with regard to local solutions and local decisions.

It's really tough. Energy and electricity issues have to be dealt with on a very high plane, but they affect people at a local level, so we need to plug those two issues together, and we need to be able to communicate with you as best we can, and we urge you to continue to communicate with us.

And I look to Jane and the rest of you to carry what you've learned out into the community as best you can. I know you will.

I urge you when you have questions, though, and you cannot believe how we just barely scratched the surface today, and we didn't get this iceberg out of the water, you dealt with the above the water line piece, but you really have to deal with the whole thing.

So I urge you to call the staff or any of us any time to get more information about these

issues to round out your ability to talk in your communities of interest about this subject.

So I found today to be delightful and a pleasure, as compared with getting beat up by industry in here so many other days. So, anyway, I thank you all very much, and I appreciate the valuable input.

I took more notes today than I have in most of the workshops, so that, to me, is fairly significant. Mr. Chairman?

CHAIRMAN KEESE: I'll be brief. What pleased me was the alignment that I'm seeing. As Jim said, we're halfway through our fact-finding, our looking at what we see as the future. We can't regurgitate it all up.

We've had our world petroleum seminars with experts from Europe and the United States. We've been going through a lot of this. This is our first move towards the policy side. And what you have come up, what I've heard coming out of here, aligns very nicely with the way we're starting to think.

What we see as the endgame in this process. We were faced, as we started this, with two roads. One was decide where we're going, and

then build the case for that. We chose not to take that road.

We said let's find out everything that's out there, and then we'll decide where we're going. It makes it much more difficult on staff, it makes it very difficult on you. But what you've come back with seems to align with where we think we're going to be at the end.

When we come to the end of this process we will put something forward. And we're going to come out to the public again. That will give you something really meaty to look at.

I'm glad you're joining us in this foundational step of understanding where we are, so you then can look at what we put out about going forward and give us really solid comments. So thank you again for joining us, this have been really delightful. Thank you, staff.

MR. BAIRD: Thank you. One final note, the Energy Commission will release the draft 2003 Environmental Performance Report on June 24th, and there will be a hearing on that on July 8th. I would just like to thank Karen, Valerie, Jim and Bob for making this a success today. Thank you.

CHAIRMAN BOYD: And anyone who wants to

hear that siren go off again, just try to go out that door.

(laughter)

(Thereupon, at 3:51, the workshop was adjourned.)

CERTIFICATE OF REPORTER

I, ALAN MEADE, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 27th day of June, 2003.